DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
2 NAVY ANNEX
WASHINGTON, DC 20380-1775

NAVMC DIR 3500.88
C 4610
25 Jan 06

NAVMC DIRECTIVE 3500.88

Subj: CH-46E TRAINING AND READINESS (T&R) MANUAL

Ref: (a) NAVMC DIR 3500.14

Encl: (1) LOCATOR SHEET

1. PURPOSE. To revise training standards and regulations regarding the training of CH-46E aircrew per the reference.

2. CANCELLATION. MCO P3500.50.

3. INFORMATION

a. The purpose of this revision is to align CH-46E syllabi with T&R Program Manual policy and to fine-tune core model table construction with Deputy Commandant Aviation's vision to report training level readiness via the T&R core model.

b. Recommended changes to this directive are invited, and will be submitted via the syllabus sponsor and the appropriate chain of command to the Commanding General, Training and Education Command, Aviation Training Branch via e-mail (refer to http://www.tecom.usmc.mil/atb/contacts_.htm) or the Defense Message System using the following plain language address: CG TECOM QUANTICO VA ATB.

4. SCOPE. CH-46E squadrons will train to the standards and programs of instruction contained in this Directive.

5. COMMAND. This Directive is applicable to the Marine Corps Total Force.

6. CERTIFICATION. This Directive is reviewed and approved this date.

K. J. STALDER
By direction

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LOCATOR SHEET

Subj: CH-46E TRAINING AND READINESS (T&R) MANUAL

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RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporated Change

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CH-46E PILOT

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CHAPTER 1

CH-46E PILOT

100. MARINE MEDIUM HELICOPTER SQUADRON (CH-46E) UNIT CORE COMPETENCY. Marine Aviation plays a crucial role in the MAGTF's ability to conduct Maneuver Warfare. The ultimate goal of Marine Aviation is to attain the highest possible combat readiness to support Expeditionary Maneuver Warfare while at the same time preserving and conserving our Marines and equipment. Embedded within our combat readiness is the ability to rapidly, effectively, and efficiently deploy on short notice and the ability to quickly and effectively plan for crises and/or contingency operations thereby ensuring Marine Aviation remains ready for combat when and where the need arises. The CH-46E T&R Manual represents the collaborative effort of CH-46E Subject Matter Experts who designed training standards to maximize the full combat capabilities of the CH-46E and its crew. These standards, intrinsic in the core competency section, describe and define unit capabilities and requirements necessary to maintain like-squadron proficiency in core skills and combat leadership. Training events are based on specific requirements and performance standards to ensure aircrew maintain a common base of training and depth of combat capabilities. Together, the T&R comprises a building block approach to ensure that trained aircrews remain ready, relevant, and fully capable of supporting the MAGTF commander.

1. HMM Mission. Support the MAGTF Commander by providing assault support transport of combat troops, supplies and equipment, day or night under all weather conditions during expeditionary, joint or combined operations.

2. Mission Essential Task List (METL)

a. (UJTL TA 1.1.2) Conduct Shipboard Deck helicopter Landing Qualifications.

b. (UJTL TA 1.1.4) Conduct Sea and Air Deployment Operations.

(1) Maintain the capability to deploy and operate from advanced bases, expeditionary airfields, Forward Operating Bases (FOBs), and naval shipping.

(2) Perform organizational maintenance on assigned aircraft.

c. (UJTL TA 1.2.1) Conduct Air Assault Operations and Air Assault.

(1) Provide assault support transport of combat troops.

(2) Provide support for casualty evacuation operations.

(3) Maintain self-defense capability from ground-to-air and air-to-air threats.

d. (UJTL TA 1.2.3) Conduct Amphibious Assault and Raid Operations.

(1) Conduct assault support for maritime special operations.

e. (UJTL TA 4.2) Distribute Supplies and Provide Transport Service

(1) Conduct aerial re-supply.

(2) Provide support for mobile Forward Arming and Refueling Points (FARPS).

f. (UJTL TA 6.2) Conduct Joint Personnel Recovery.

(1) Conduct Tactical Recovery of Aircraft and Personnel (TRAP) operations.

(2) Augment local Search and Rescue (SAR) assets.

g. (UJTL TA 6.4) Conduct Noncombatant Evacuation.

(1) Provide support for evacuation operations.

3. Table of Organization. Refer to Table of Organization 8940 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for CH-46 units. As of this publication date, CH-46 units are authorized:

Squadron
12 aircraft
28 Pilots/19 Crew Chiefs/19 Aerial Gunner/Observers

4. Core Capability. A core capable squadron is able to sustain 20 sorties on a daily basis during contingency/combat operations. The above sortie rates are based on 1.5 hour average sortie duration and assumes > 70 percent FMC aircraft and > 90 percent T/O aircrew. If unit FMC aircraft < 70 percent or assigned crew < 90 percent T/O, core capability will be degraded by a like percentage. A core capable squadron is able to accomplish all tasks designated in the unit METL from a main base, expeditionary base, and/or carrier/amphibious platform (as appropriate per aircraft/system).

5. METL/Core Skill Matrix. CH-46 core skills directly support the METL as follows:

METL	FAM/ INST	CAL	EXT	FORM	TERF	NS HLL	NS LLL
a. Conduct Shipboard Deck helicopter Landing qualifications	X					X	X
b. Conduct Sea and Air Deployment Operations	X	X	X	X	X	X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X	X	X	X
f. Conduct Joint Personnel Recovery	X	X		X	X	X	X
g. Conduct Noncombatant Evacuation	X	X		X	X	X	X

METL	AG	GTR	MAT	HIE	TAC	CQ
a. Conduct Shipboard Deck helicopter Landing qualifications						X
b. Conduct Sea and Air Deployment Operations	X	X	X		X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X		X	X
f. Conduct Joint Personnel Recovery	X	X	X	X	X	X
g. Conduct Noncombatant Evacuation	X		X		X	X

METL	SFAM	*TAC	*CAL	*EXT	*NBC	*DM	*MAT	*HIE	*TG	*CQ
a. Conduct Shipboard Deck helicopter Landing qualifications	X									X
b. Conduct Sea and Air Deployment Operations	X	X	X	X	X	X	X		X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X	X	X	X	X	X	X
f. Conduct Joint Personnel Recovery	X	X	X			X	X	X	X	X
g. Conduct Noncombatant Evacuation	X	X	X			X	X		X	X
* Core Plus Skill										

6. Core Model Minimum Requirements (CMMR). CMMR is measured in terms of the minimum numbers of Core Skill Proficiency (CSP) crews and minimum numbers of combat leaders per paragraphs a. and b. below:

a. Minimum Unit CSP Requirements. As a minimum, in order to be considered Core Competent, a unit must possess the following numbers of crews who are proficient in each core skill (Unit CSP).

CH-46E CMMR (Unit CSP Requirements)				
CORE SKILL	SQDN Pilots	SQDN Crew Chiefs	SQDN AG/O	SQDN Crews
FAM/INST	16	8	8	8
CAL	16	8	8	8
EXT	12	6	6	6
FORM	16	8	8	8
TERF	16	8	8	8
NS HLL	16	8	8	8
NS LLL	16	8	8	8
AG	16	8	8	8
GTR	12	6	6	6
MAT	12	6	6	6
HIE	12	6	6	6
TAC	12	6	6	6
CQ	12	6	6	6

CH-46E CMMR (Unit CSP Requirements)				
CORE PLUS SKILL	SQDN Pilots	SQDN Crew Chiefs	SQDN AG/O	SQDN Crews
SFAM	-	6	-	6
TAC	12	6	6	6
CAL	12	6	6	6
EXT	12	6	6	6
NBC	12	6	6	6
DM	12	6	6	6
MAT	12	6	6	6
HIE	12	6	6	6
TG	-	6	-	6
CQ	12	6	6	6

A standard CH-46 crew consists of 2 Pilots, one Crew Chief, and an AG/O. A CSP crew consists of individuals representing each crew position who have achieved and maintain individual CSP. In order to be considered proficient in a core skill, a crewmember must attain and maintain proficiency in core skill events as delineated in paragraphs (1) and (2) below.
* Proficiency in Core Plus Skills is not required to obtain unit CSP.

(1) Events Required to Attain Individual CSP. To initially attain CSP in a core skill, an individual must simultaneously have a 'proficient' status in all of the Core (200-300) T&R events listed in the table below for that core skill:

Individual CSP Attain Table						
Pilot	FAM/ INST	CAL	EXT	FORM	TERF	NS HLL
T&R event requirements to attain CSP	S200 201R 202R	S210 211 212R	S220 221R 392R	S230 231R	S240 241 242 243R	S250 251R 252 253R 254 255 256 257R
R = Refresher POI event S = Event conducted in simulator						

Individual CSP Attain Table							
Pilot	AG	CQ	NS LLL	GTR	MAT	HIE	TAC
T&R event requirements to attain CSP	281R 321R	S290 291 293 300 301R	S310 311R 312R 313R 314R	S330 331R 332R	S350 351R	S360 361R 362	S370 371 372 S373 374 375R
R = Refresher POI event S = Event conducted in simulator							

(2) Events Required to Maintain Individual CSP. To maintain CSP in a core skill, an individual must maintain proficiency in all of the Core (200-300) T&R events listed in the table below for that core skill.

Individual CSP Maintain Table							
Pilot	FAM/ INST	CAL	EXT	FORM	TERF	NS HLL	NS LLL
T&R event requirements to maintain CSP	201R 202R	- 212R	221R 392R	231R	243R	257R	313R 314R
R = Refresher POI event S = Event conducted in simulator							

Individual CSP Maintain Table						
Pilot	AG	GTR	MAT	HIE	TAC	CQ
T&R event requirements to maintain CSP	281R 321R	331R 332R	351R	361R	375R	301R
R = Refresher POI event S = Event conducted in simulator						

(3) Events Required to Attain Individual Proficiency in Core Plus Skills. Proficiency in Core Plus Skills is not required to obtain unit CSP. Training to Core Plus Skills is at the discretion of the unit commanding officer. To initially attain proficiency in a Core Plus Skill, an individual

must simultaneously have a 'proficient' status in all of the T&R events listed in the table below for that Core Plus Skill:

Individual Core Plus Skills Attain Table								
CH-46 Pilot	TAC	CAL	EXT	NBC	DM	MAT	HIE	CQ
T&R event requirements to attain Core Plus Skill proficiency	400 401 402R	413R	420R	S430 431R 432	S440 441R 442R	450 451R	460R 461R 462R 463R	490 491R
R = Refresher POI event S = Event conducted in simulator								

(4) Events Required to Maintain Individual Proficiency in Core Plus Skills. To maintain proficiency in a core plus skill, an individual must maintain proficiency in all of the T&R events listed in the table below for that core plus skill:

Individual Core Plus Skills Maintain Table								
CH-46 Pilot	TAC	CAL	EXT	NBC	DM	MAT	HIE	CQ
T&R event requirements to attain Core Plus Skill proficiency	402R	413R	420R	431R	441R 442R	451R	460R 461R 462R 463R	491R
R = Refresher POI event S = Event conducted in simulator								

b. Minimum Combat Leader Requirements. At a minimum, in order to be considered Core Competent, a unit must possess the following numbers of aircrew with the listed flight leadership designations. The flight leadership designations of the squadron CO, XO, OpsO, and MO should not be used to meet the squadron flight leadership minimums (HAC not inclusive). The intent of this note is not to prevent the squadron's senior leaders from flying in these billets, but rather, to ensure that the squadron has appropriate depth due to the fact that competing demands may limit the flight time of these senior leaders. FCP, although not specifically a combat leader, is required to sustain Core Capability in contingency operations.

CMMR (Unit Combat Leadership Requirements)	
DESIGNATION	SQDN Pilots
HAC	12
SEC LDR	6
DIV LDR	4
FLT LDR	2
AMC	2
FCP	4

7. Qualifications, Designations, and Instructor Requirements Tables. The tables below delineate T&R events required to be completed to attain initial qualifications, to re-qualify, and to attain designations. All stage

lectures, briefs, squadron training and prerequisites shall be complete prior to completing final events. Qualification and designation letters signed by the commanding officer shall be placed in individual NATOPS and APR/MPR jackets. Loss of proficiency in all qualification events causes the associated qualification to be lost. Regaining a qualification requires completing all R coded syllabus events associated with that qualification. Designations are command specific. Therefore, if pilot has not had PCS or PCA orders since previous designation letter, no additional designation letter is required. Follow-on commands shall repeat "initial documentation procedure."

Qualification (TRACKING CODE)	Initial Event Qualification Requirements
NATOPS (600E)	IAW OPNAVINST 3710.7.
Instrument (601E)	IAW OPNAVINST 3710.7.
CRM (640E)	IAW OPNAVINST 1542.7.
TERF (650)	241, 242, 243
NSQ HLL (651)	251, 252, 253, 254, 255, 256, 257
AG (EAC) (652)	281, 282, 283, 321, 322
CQ (653)	300, 301
NSQ LLL (654)	311, 312, 313, 314
DM (655)	441, 442
TG (EAC) (656)	481, 482
FRS TERFQ	507
FRS NSQ	513

Designation (TRACKING CODE)	Designation Requirements
HAC	602, 603, 604, 605 (Redesignation shall require, at a minimum, 604 or 605. Balance of the syllabus prior to HAC check shall remain at the discretion of the commanding officer.)
TERFI (660)	IAW MAWTS-1 Course Catalog
DMI (661)	IAW MAWTS-1 Course Catalog
NSFI (662)	IAW MAWTS-1 Course Catalog
NSI (663)	IAW MAWTS-1 Course Catalog
AGI (EAC) (664)	IAW MAWTS-1 Course Catalog
TGI (EAC) (665)	IAW MAWTS-1 Course Catalog
WTI (666)	IAW MAWTS-1 Course Catalog
NSSI (667)	IAW MAWTS-1 Course Catalog
FRSI (668)	500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 511
FRSCCI (668)	500, 501, 502, 503, 504, 505, 506
SEC LDR (670)	606, 607, 608
DIV LDR (671)	609, 610, 611
FLT LDR (672)	612
AIR MSN CDR (673)	613
FCF (674)	IAW OPNAVINST 4790 and command specific directives, 630E

Note: Refer to paragraph 153 for tracking code explanation.

a. Instructor Requirements. A unit should possess the following numbers of aircrew with the listed instructor designations IAW MCO 3500.12 (WTTP).

Note: Squadron CO/XO instructor designations shall not count toward the following numbers:

INSTRUCTOR DESIGNATION	Pilots	C/C
TERFI	6	6
DMI	2	2
NSI	4	4
WTI	2*	2**
AGI	N/A	4+
TGI	N/A	2

*One shall be assigned as the squadron WTI. The squadron CO, XO, OPSO, and AMO shall not fill the squadron WTI billet.
**One shall be assigned in Operations as the squadron enlisted WTI.
+AG/O's holding AGI designation shall not be included in this number.

8. Training Progression Models. Training progression models provide community recommended qualification and designation attainment timelines for the average crewmember.

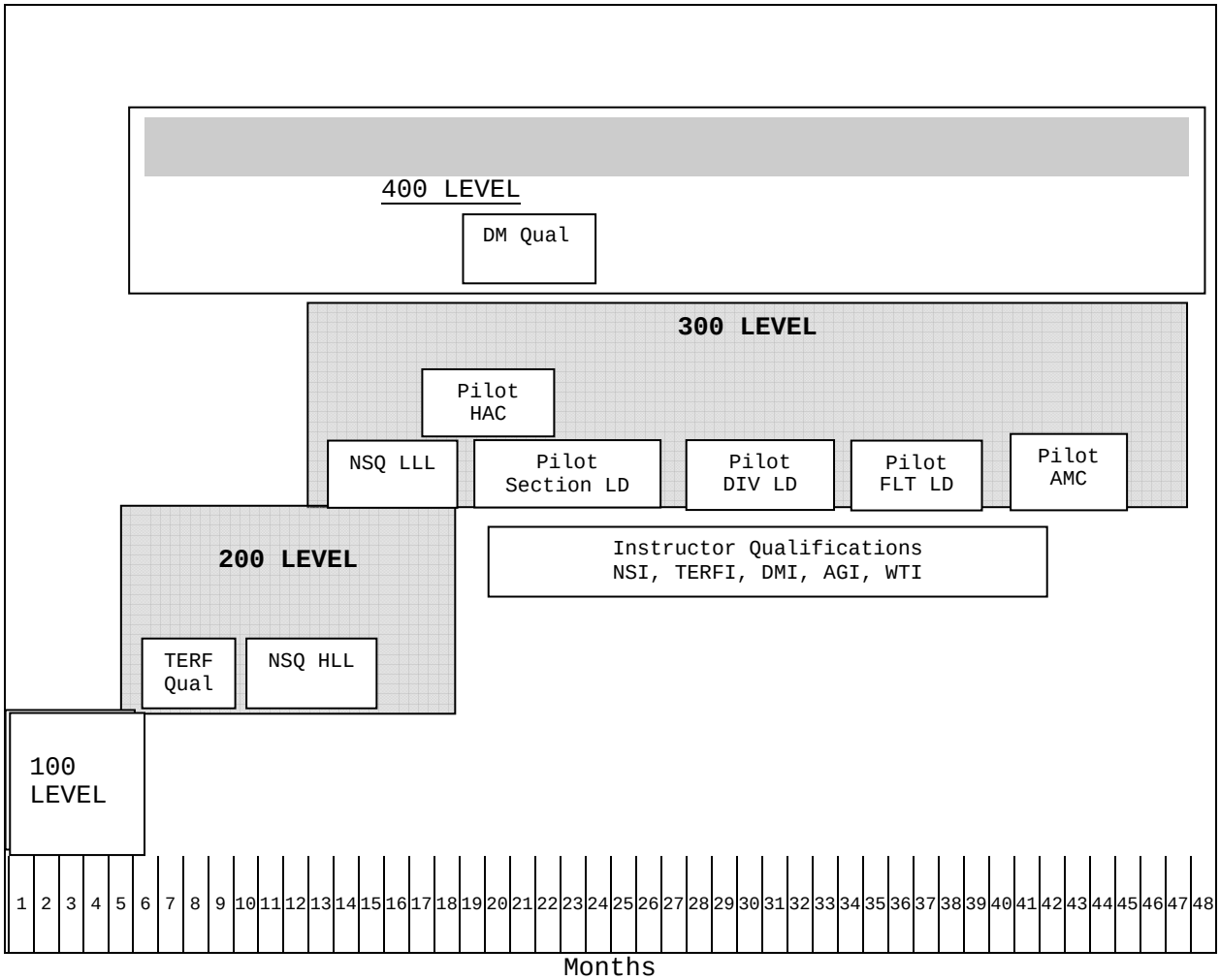

Figure 1-1 CH-46E Pilot Notional Training Progression Model.

101. PROGRAM OF INSTRUCTION (POI) FOR BASIC PILOT. Transition and Conversion pilots will fly the Basic POI.

WEEKS	COURSE/PHASE	ACTIVITY
1-2	Ground/Academic Training	Training Squadron
3-20	Core Skill Introduction	Training Squadron
21-29	Core Skill Basic	Tactical Squadron
30-49	Core Skill Advanced	Tactical Squadron
50-56	Core Skill Plus	Tactical Squadron

102. POI FOR REFRESHER/MODIFIED REFRESHER PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1	Ground/Academic Training	Training Squadron
2-9	Core Skill Introduction	Training Squadron
10-13	Core Skill Basic	Tactical Squadron
14-17	Core Skill Advanced	Tactical Squadron
18-20	Core Skill Plus	Tactical Squadron

120. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION. Utilize academic courseware as outlined in the Computer Based Training (CBT) program and Chapters 6 and 9 of the MAWTS-1 Course Catalog.

130. EVENT PERFORMANCE REQUIREMENTS

1. General

a. The following conditions apply:

Environmental Conditions	
Code	Meaning
	Shall be flown during hours of daylight: (by exception - there is no use of a symbol)
N	Shall be flown during hours of darkness, may be aided or unaided
N*	Shall be flown during hours of darkness must be flown unaided
(N*)	May be flown during hours of darkness – If flown during hours of darkness must be flown unaided
(N)	May be flown during darkness – If flown during hours of darkness; may be flown aided or unaided
NS	Shall be flown during hours of darkness – Mandatory use of Night Vision Devices
(NS)	May be flown during darkness – If flown during hours of darkness; must be flown with Night Vision Devices
Note – If the event is to be flown in the simulator the Simulator Instructor shall set the desired environmental conditions for the event.	

b. Pilots should fly all simulator (S) training codes prior to the first flight in the aircraft in stage.

c. Simulators. The Weapons Systems Trainer (WST)/Aircrew Procedures Trainer (APT) should be used in those flights designated S or S/A within the syllabus. Demonstration and exercise modes of the flight simulator shall be

used within the training syllabus. If the flight simulator is not available, simulator periods designated as S may be waived.

d. Aircraft/Simulator Codes. These codes are assigned to delineate whether the event uses a simulator or an airframe. The codes are located in the event header following the POI codes. A = aircraft, S = simulator, A/S = aircraft preferred/simulator optional, S/A = simulator preferred/aircraft optional.

2. Computer Based Training (CBT) Program. All pilots shall complete assigned CBT lessons prior to completion of the applicable stage.

3. Evaluation Sorties

a. A designated NATOPS Instructor (NI)/Assistant NATOPS Instructor (ANI) shall evaluate RQD-600.

b. A designated instrument evaluator shall evaluate RQD-601.

c. Unless a specific instructor pilot requirement is assigned to the event, at a minimum a Helicopter Aircraft Commander (HAC) or appropriate Instructor Pilot (IP) acting as Pilot In Command (PIC), proficient in a givenevent should evaluate all initial events required for a basic Conversion, Transition, or Refresher Pilot Under Instruction (PUI), or any non-proficient (e.g. delinquent) pilot who has exceeded the refly factor. The evaluator shall complete an ATF for the event.

d. If the commanding officer has waived/deferred a syllabus event, the squadron Pilot Training Officer/WTI/EWTI must place a waiver/deferral letter in section 3 of the APR.

e. All 200-600 level ATFs will be developed and maintained by the Syllabus Sponsor. Updated ATFs will be disseminated in conjunction with publication of Interim Approved T&Rs.

f. All flights annotated with an E shall be evaluated per T&R Program Manual paragraph 304.3.b.

g. The Pilot Training Officer/WTI/Enlisted WTI (EWTI)shall ensure all Aircrew Training Forms (ATFs) are entered in section 3 of the Aircrew Performance Record (APR) for all initial events flown. These ATFs shall remain until a more current ATF replaces it. Multiple ATFs may be collected per training event if applicable or directed.

h. Transition and Conversion pilots shall be assigned to the basic POI and shall have ATFs entered in section 3 of the APR for all flights. Refresher/Modified Refresher pilots shall have ATFs entered in section 3 of the APR for all flights designated by a R or MR in the flight description. These ATFs will replace ATFs previously entered in section 3.

4. Syllabus Assignment. Basic, Transition, and Conversion pilots shall fly the entire syllabus. Refresher/Modified Refresher pilots should fly those flights designated by an R or MR in the flight description. The FRS CO may waive or defer Core Skill Introduction syllabus events as required and in accordance with the program manual.

5. Refresher Syllabus. The Refresher syllabus is designed for pilots who have previous experience in the CH-46. Pilots returning to a squadron, who have previously been assigned to the Basic POI (completed at least one squadron fleet tour) shall be assigned to the Refresher POI. In addition, pilots assigned to the Basic POI who have attained Individual Core Skill Proficiency in all Core Skills (completed all "Individual CSP attain table" events), shall be re-assigned to the Refresher POI.

a. FRS Refresher Training. FRS Refresher training is prescribed for pilots returning to a DIFOP operating force billet, who have previously been assigned to the Basic POI but have not flown the model aircraft within established time intervals. Pilots who have been out of type longer than 485 days but less than or equal to 730 days will receive a Modified Refresher (MR) syllabus at the FRS. Pilots who have been out of type for greater than 730 days shall receive full Refresher syllabus (R) at the FRS. Upon joining a tactical squadron they will continue to complete the Refresher POI by flying all R-coded events.

b. Tactical Squadron Refresher Training. Delinquent pilots returning to the tactical squadron shall be assigned to the Refresher POI and shall complete 200-600 level R-coded events. When all R-coded events in a stage are successfully completed, all remaining events in that stage that are proficient or delinquent are updated. Incomplete (never previously completed in the Basic POI) events are not updated and must be completed in addition to R-coded events.

c. Refresher Waivers and Deferrals. Commanding officers may waive or defer portions of a Refresher pilot's training requirements per paragraph 305 of MCO P3500.14 (Aviation T&R Program Manual). For waived events, CRP credit shall be credited and event proficiency status shall be updated. For deferred events, the pilot must complete the event at a later date when equipment and logistics can support. CRP credit will not be assigned. For both waived and deferred events, a documentation letter will be placed in Section III of the pilot's ATJ.

d. Refresher Designations. Refresher pilots may regain previously held flight leadership designations (HAC, Sec Ld, Div Ld, Flt Ld, AMC) by re-completing the associated flight leadership evaluation event for each previously accomplished designation. A designation letter will be placed in the pilot's ATJ.

e. Refresher Qualifications. Refresher pilots may regain previously held qualifications by successfully re-completing all R-coded events associated with the respective qualification (unless waived per paragraph 305). A qualification letter will be placed in the pilot's ATJ.

f. Refresher Certifications. Refresher pilots may regain previously held certifications in accordance with the MAWTS-1 Course Catalog or the T&R as appropriate. Refer to the Course Catalog for re-certification requirements for all instructor certifications, excluding FRSCCI. A certification letter will be placed in the pilot's ATJ.

6. Aircrew Evaluation Flights. All pilots shall have the appropriate evaluation form filled out upon completion of the following:

a. Annual NATOPS Check (RQD-600).

b. Annual Instrument Check (RQD-601).

c. Annual CRM Check (CRM-640)

d. Any flight in the Core Skill Basic, Core Skill Advanced, Core Plus phase as recommended by the Squadron Standardization Board.

7. Crew Resource Management (CRM). Aircrews shall brief techniques of CRM for all flights and/or events.

8. Definitions

a. Demonstrate. The description and performance of a particular maneuver by the instructor, observed by the PUI. The PUI is responsible for knowledge of the procedures prior to the demonstration of a required maneuver.

b. Discuss. An explanation of systems, procedures, or maneuvers during the brief, in flight, or post flight.

c. Evaluate. Any flight designed to evaluate aircrew standardization that does not fit another category such as SARCK, HACCK, T2PCK, etc.

d. Introduce. The instructor may demonstrate a procedure or maneuver to a student, or may coach the PUI through the maneuver without demonstration. The PUI performs the procedures or maneuver with coaching as necessary. The PUI is responsible for knowledge of the procedures.

e. Review. Demonstrated proficiency of a maneuver by the PUI.

131. CORE SKILL INTRODUCTION PHASE

1. General

a. The CH-46E Fleet Replacement Squadron (FRS) shall develop the standardization of introductory flight maneuvers, classroom materials and procedures for instructional/student training and maintain the Core Skill Introduction Phase syllabus for the CH-46E T&R.

b. FRS Instructors shall log 200 to 400 level codes that are comparable in performance standards of a 100 level code.

2. Familiarization (FAM)

a. Purpose. To develop preliminary flight skills in the CH-46E and become familiar with aircraft flight characteristics, limitations, emergency procedures, and to develop proficiency in all maneuvers contained in the familiarization stage.

b. General

(1) Pilots will find detailed descriptions of all flight maneuvers in the CH-46E NATOPS Flight Manual and the FRS CH-46E Standardization Manual.

(2) All pilots shall study and obtain a basic knowledge of aircraft systems and discuss them in a brief. All emergency procedures and

limitations shall be memorized and evaluated in flight IAW the CH-46E NATOPS Flight Manual.

(3) All pilots shall be responsible for all emergencies and maneuvers previously discussed or flown throughout this stage of flight.

(4) All pilots shall have a flight physical, emergency egress and NASTP (Physiology and Water Survival) completed and up-to-date prior to flying a FAM-109.

(5) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirements

(1) Simulator Training - Two RACs/qualified instructor.

(2) Flight Training - IP/RAC/CC or IP/REF/CC.

d. Ground/Academic Training

(1) All pilots shall complete all assigned CBT lessons prior to FAM-109.

(2) All pilots shall complete the Course Rules Class, Load Computation Class, and Crew Resource Management Class prior to FAM-109.

(3) RACs shall complete the Pilot Familiarization (PFAM) Class, CNCS/PFPS Introduction Class prior to FAM-109.

(4) All pilots shall complete the NATOPS Open Book Test, Course Rules Test, and SOP Test prior to FAM-109.

(5) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

e. Flight and Simulator Event Training (10 Flights, 15.5 Hours/10 Simulator Events, 20.0 Hours)

SFAM-100 2.0 R,MR E WST S

Goal. Introduce cockpit preflight inspection, checklists, and engine start procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Functions the Weapons System Trainer (WST) can simulate and those that are not possible.
- Engines and related systems.
  - Beep trim switches.
  - Primary/secondary indications.
- Start/shutdown limitations.
- Operation of cockpit controls/equipment.

Introduce/Evaluate:
- Interior inspection/pre-start checklist.
- Normal engine start.
- Single engine start/engagement.
- Pre-taxi checklist.
- Radios and communication.
  - Voice communication.
  - ICS operation.
  - UHF & VHF operation.
- Normal shutdown.

Performance Standards. Pilot shall demonstrate knowledge of engine systems, NATOPS Checklists, and communication systems.

Prerequisite. Appropriate FRS CBT Lessons.

External Syllabus Support. WST/APT.

SFAM-101 2.0 E WST S

Goal. Introduce pattern work and ground emergencies.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- APU.

Introduce/Evaluate:
- Ground taxi.
- Takeoff checklist.
- Vertical takeoff.
- Hover patterns.
- Transition to forward flight.
- Normal Pattern.
- Landing checklist.
- Normal approach to a hover.
- Vertical landing.

Review:
- Engine start/shutdown.
- Rotor engagement.
- Communication procedures.

- Emergencies:
  - Engine start malfunctions.
    - Hot start/cold hang-up.
    - Circuit breaker malfunctions.
    - Starter hang-up.
  - APP/APU malfunctions.
    - Circuit breaker malfunctions.
    - Battery malfunction.
    - APU fire.

Performance Standards. Pilot shall demonstrate knowledge of APU and start emergencies, conduct engine start and shutdown

IAW NATOPS pocket checklist and basic FAM maneuvers IAW FRS Standardization Manual.

Prerequisite. SFAM-100, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

SFAM-102 2.0 E WST S

Goal. Introduce engine related problems in the transition stage and practice basic FAM maneuvers.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Rotor Brake.

Introduce/Evaluate:
- Communications procedures.
- Normal approach to a hover.
- Normal approach to a no-hover.
- Max Gross Wt (minimum power) takeoffs and landings.

Review: All previously introduced malfunctions and procedures.

Emergencies:
- Engine condition actuator malfunctions.
  - ECA failure rotor brake on.
  - ECA failure on shutdown (FREEZE/MAX/MIN).
- Single engine emergencies.
  - HIGE.
  - HOGE.
  - Takeoff.
- Engine compartment fire (on deck).
- Transformer rectifier failure.
- Cross-tie failure (APU running).
- Utility hot light.
- Rotor brake slippage.

Performance Standards. Pilot shall demonstrate knowledge of the rotor brake system, ECA failures and operation of the aircraft under high gross weights (minimum power).

Prerequisite. SFAM-101, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

SFAM-103 2.0 E WST S

Goal. Introduce running takeoffs and landings and AFCS off flight.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- AFCS.

Introduce/Evaluate:
- Running takeoff.
- Running landing.
- AFCS off flight.
- Single engine Landings/waveoffs.

Review: Start and shutdown checklist and all previously introduced maneuvers.

Emergencies:
- ECA failures in flight.
  - Maximum.
  - Minimum.
  - Intermittent.
- Generator failure.
- LCT failures.

Performance Standards. Pilot shall demonstrate knowledge of the automatic flight control system, single engine operation, and running takeoffs and landings.

Prerequisite. SFAM-102, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

SFAM-104 2.0 R,MR E WST S

Goal. Review previous pattern work and introduce steep approaches and autorotations.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Engine oil system.

Introduce/Evaluate:
- Steep approaches.
  - Hover landing.
  - No hover landing.
- Straight in 80 kt autorotation.

Review: AFCS off flight and all previously introduced maneuvers and emergencies.

Emergencies:
- Single engine emergencies.
  - Lube pump drive shaft failure.
  - Sprag clutch slippage.
  - Compressor stall.
- DC bus failure.

Performance Standards. Pilot shall demonstrate knowledge of the engine oil system, single engine operation, steep approaches and autorotations.

Prerequisite. SFAM-103, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

SFAM-105 2.0 E WST S

Goal. Introduce 90-degree power recovery autorotation, emergency throttle operations and review previous maneuvers.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Emergency throttle system.

Introduce/Evaluate:
- Obstacle takeoff.
- Emergency throttle operations.
- 90-degree autorotation.

Review: All previously introduced procedures.

Emergencies:
- Single engine emergencies.
  - Power turbine speed signal interruption (Flex shaft failure).
  - Engine compartment fire.
- Essential bus failures.
- Control boost malfunctions.
- Rotor brake failure in flight.

Performance Standards. Pilot shall demonstrate knowledge of the emergency throttle system, obstacle takeoff and 90-degree autorotation.

Prerequisite. SFAM-104, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

SFAM-106 2.0 E WST S

Goal. Review/evaluate all previously introduced maneuvers and emergencies.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Electrical system.

Introduce/Demonstrate:
- AFCS off during portions of flight.
- Autorotation.
- Emergency throttle operations.

Review: All previously introduced maneuvers and emergencies.

Emergencies:
- Fuel contamination.
- Fuel boost malfunctions.
- Engine driven fuel pump failure.
- Electrical fire/smoke.
- Single and dual AFCS malfunctions.
- Transmission malfunctions.
  - Gauge malfunctions.
  - Imminent failure.

Performance Standards. Pilot shall demonstrate knowledge of the electrical systems and all previously introduced maneuvers and emergencies.

Prerequisites. SFAM-105, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

SFAM-107 2.0 R,MR E WST S

Goal. Review all FAM stage maneuvers.

Requirement. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

Evaluate: Previously introduced maneuvers and emergencies.

Emergencies: AC essential bus failure and DC bus failure.

Prerequisite. SFAM-106, appropriate FRS CBT program lessons.

Performance Standards. Pilot shall demonstrate knowledge of start, shutdown and in flight emergencies and demonstrate proficiency in checklists and cockpit layout.

External Syllabus Support. WST/APT.

SFAM-118 2.0 R,MR E WST S

Goal. Introduce/Evaluate ECCS start/shutdown, ground emergencies and basic single engine emergencies.

Requirement

Discuss: (ref: CH-46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)
- ECCS system
  - Theory of operation.
  - Start sequence.
  - Shutdown sequence.

Normal mode operation.
Manual mode operation.
Emergencies
Hot Start.
Single engine failure takeoff.
Single engine failure in HOGE.
Single engine failure in flight.
Compressor stall.

Introduce/Evaluate:
Normal engine start.
Normal shutdown.

Emergencies:
Hot start.
Single engine failure on takeoff.
Single engine failure in HOGE.
Single engine failure in flight.
Compressor stall.
ECA failure on shutdown.

Performance Standards. Pilot shall demonstrate knowledge of ECCS, NATOPS checklists and basic single engine emergencies with ECCS.

Prerequisite. SFAM-107, appropriate FRS CBT Lessons.

External Syllabus Support. WST/APT.

SFAM-119 2.0 R,MR E WST S

Goal. Introduce/Evaluate ECCS in flight emergencies.

Requirement

Discuss: (ref: CH-46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)
ECCS system
Fail freeze circuitry.
Engine malfunction analysis chart.
Emergencies
ECCS failure in flight.
Flex shaft failure in flight.
Sprag clutch slippage.

Review: Start and shutdown checklist and previously introduced emergencies.

Emergencies:
ECCS failure in flight.
Flex shaft failure in flight.
Sprag clutch slippage.

Performance Standards. Pilot shall demonstrate knowledge of ECCS, inflight emergencies and demonstrate proficiency in NATOPS checklists.

Prerequisite. SFAM-118, appropriate FRS CBT Lessons.

External Syllabus Support. WST/APT.

FAM-108 0.0 R,MR E 1 STATIC ACFT A

Goal. Introduce normal ground and preflight procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, FRS Preflight Manual)
- Systems
  - APU/Ground Power.
  - CNCS.
- Emergencies
  - APU compartment fire.
  - All emergency procedures covered in simulator stage.

Introduce/Evaluate:
- Mission Brief to include ODO and NATOPS Brief. Load Computation and CG Limitations.
- Aircraft Discrepancy Book to determine aircraft status: up/down discrepancies, discrepancies that modify the mission plan, and aircraft properly serviced for mission.
- Preflight routine to include gear checkout/preflight, flight line safety and tour of squadron maintenance spaces.
- Preflight.
- Postflight.
- Visual communication with hand signals ashore (start/engage/shutdown).
- Hot seat procedures.
- Emergency egress.
- CNCS FAM on APU/ground power.
- NATOPS Checklists (prestart/starting engines/engaging rotors/pretaxi/pretakeoff/takeoff/prelanding/post-landing/shutdown).

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems and nomenclature and squadron procedures for flight line safety.

Prerequisite. SFAM-119, appropriate FRS CBT program lessons.

External Syllabus Support. Ground power source.

FAM-109 2.0 E 1 CH-46E A

Goal. Introduce start, normal ground and flight procedures including low work and normal approaches. Review SFAM-101.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Systems
  - Engine condition system.

Engine oil system.
Flight Control System
Emergencies
Hot start/engine fire.
Engine compartment fire.
Rotor brake slippage during engine start.
ECA failure with rotor brake on.
ECA failure on shutdown.
Cold hang-up.
APU compartment fire
ECA failure in flight

Demonstrate/Introduce:
Normal cockpit procedures.
Starting procedures.
Communication procedures.
Pretaxi procedures.
Ground taxiing.
Elevated nose wheel taxi/rearward taxi (demo).
Vertical takeoff.
Transition to forward flight (demo).
Normal approach (demo).
Max gross takeoff and landing (demo).
Hover patterns.
Operation of engine beep trim switches.
Shutdown procedures.
Aircraft trim/CDRB usage.
Home field course rules.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems and introduce basic FAM maneuvers.

Prerequisite. FAM-108, ACAD-001 through ACAD-012 complete.

FAM-110 2.0 E 1 CH-46E A

Goal. Introduce landing pattern options. Practice start, normal ground and previously introduced flight procedures. Review SFAM-102.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Systems
Power Management System.
Engine Condition Control System.
Emergencies
Single engine failure while HIGE.
Single engine failure on takeoff.
Lost communications per local course rules.
All previously introduced emergencies.
Single engine failure in flight.
Dual engine failure in flight.
Engine restart in flight.

Demonstrate/Introduce:
No hover landing (demo).
Simulated single engine/runway landing (demo).
Steep approach (demo).
Running takeoff/landing (demo).
Ramp and hatch usage (demo).
Torque horn (demo).
Local course rules.

Review/Evaluate:
Normal cockpit procedures.
Starting procedures.
Communication procedures.
Pretaxi procedures.
Ground taxiing.
Elevated nose wheel taxi/rearward taxi.
Vertical takeoff.
Transition to forward flight.
Normal approach.
Max gross takeoff and landing.
Hover patterns.
Operation of engine beep trim switches.
Shutdown procedures.
Aircraft trim/CDRB usage.
Home field course rules.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems introduce and review basic FAM maneuvers.

Prerequisite. FAM-109 and appropriate FRS CBT program lessons.

FAM-111 2.0 E 1 CH-46E A

Goal. Review previous FAM maneuvers. Practice normal cockpit procedures. Review hover/low work, ground taxi, and normal approaches.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Systems
Electrical Systems to include AC, DC, and generators.
AFCS.
Emergencies
Generator failure.
Electrical Fire.
Single AFCS failure.
Dual AFCS failure.

Demonstrate/Introduce:
PMS-off flight (demo).
Single engine failure on takeoff and HIGE (demo).
Straight-in autorotation (demo).
AFCS off flight (demo).
Steep approach.

Single engine flight/approach/wave-off.
No-hover landing.
Running takeoff/landing.
Local course rules.

Review/Evaluate:
Ground taxiing.
Vertical takeoff.
Transition to forward flight.
Normal approach.
Max gross takeoff and landing.
Communications procedures.
Previously introduced maneuvers as necessary.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-110 and appropriate FRS CBT program lessons.

FAM-112 2.0 E 1 CH-46E A

Goal. Introduce AFCS off flight and minimum power pattern work. Review SFAM-103.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Systems
Transmissions and Drive System to include Sprag Clutch.
Emergency Throttle System.
Rotor Brake System.
Emergencies
Fuselage fire in flight.
Smoke and fume elimination.
Engine fire in flight.
Imminent transmission failure.
Rotor brake failure in flight.
Sprag clutch seizure.
Sprag clutch slippage.

Demonstrate/Introduce:
Ninety-degree power recovery autorotation (demo).
Single engine to a spot (demo).
Straight-in autorotation.
AFCS off flight.
Single engine failure on takeoff/HIGE.
PMS-off flight.

Review/Evaluate:
Running takeoff and landing.
Single engine flight/approach/waveoff.
No hover landing.
Local course rules.
Steep Approach.
Max gross weight/min power takeoff and landings.

Previously introduced maneuvers as necessary.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisites. FAM-111 and appropriate FRS CBT program lessons.

FAM-113 1.5 R,MR E 1 CH-46E A

Goal. Review previous pattern work and introduce Emergency Throttle operations. Review maneuvers from SFAM-104.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E FRS Standardization Manual)
- Systems
  - Engine Fuel Control.
  - Engine Fuel System.
- Emergencies
  - Nf flex shaft failure.
  - Fuel jettison.
  - Fuel boost pump failure.
  - Engine driven fuel pump failure.
  - Fuel quantity indicator failure.
  - Compressor stall.
  - Single engine failure HOGE.
  - Dual engine failure HOGE.

Demonstrate/Introduce:
- Practice ETS operation/approaches (demo).
- Max-glide power recovery autorotation (demo).
- Simulated ECA failure in flight (demo).
- Ninety degree power recovery autorotation.
- Simulated single engine to a spot.

Review/Evaluate:
- Straight-in power recovery autorotation.
- Max gross weight/min power takeoff and landings.
- AFCS off flight/approaches.
- Simulated single engine approach/landings.
- Simulated single engine failure on takeoff.
- Simulated single engine failure HIGE.
- Previously introduced maneuvers as necessary.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-112 and appropriate FRS CBT program lessons.

FAM-114 1.5 E 1 CH-46E A

Goal. Introduce ETS/manual trim techniques and review as required.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Systems
  - Utility Hydraulic System.
  - Hydraulic Boost System.
- Emergencies
  - Hydraulic flight control boost failures.
  - Utility hydraulic system/subsystem failure.
  - Utility hydraulic system overheating.
  - LCT actuator failures.
  - Other emergencies as required.

Demonstrate/Introduce:
- FAM maneuvers in various cyclic trim modes (demo).
- Practice ETS operations in flight (demo).
- Manual trim approach/landings.
- ETS approach/landings.
- Maximum glide power recovery autorotation.

Review/Evaluate:
- Ninety degree power recovery autorotation.
- Single engine to a spot.
- Max gross weight/min power takeoff and landings.
- AFCS off flight/approaches.
- Steep approach.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-113 and appropriate FRS CBT program lessons.

FAM-115 1.5 E 1 CH-46E A

Goal. Review/evaluate all previously introduced maneuvers and emergencies.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Systems
  - Integrated Cargo Handling Systems.
  - Review all system limitations.
- Emergencies
  - Engine AGB chip light/lube pump drive shaft failure.
  - All previously introduced emergencies as required.
- Miscellaneous
  - Ditching.
  - Single engine takeoff from water/water taxi.
  - Inadvertent HEFS inflation.
  - Cargo jettison.

Review/Evaluate:
- All previously introduced FAM maneuvers.

Max glide power recovery autorotation.
ETS operations.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-114 and appropriate FRS CBT program lessons.

FAM-116 1.5 R,MR E 1 CH-46E A

Goal. FAM stage progress check.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Review all system limitations.

Review/Evaluate:
All FAM stage maneuvers.
All previously introduced emergencies.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems and basic FAM maneuvers as well as the capability to preflight the aircraft.

Prerequisite. FAM-115 and appropriate FRS CBT program lessons.

FAM-117 1.5 R,MR E 1 CH-46E A N*

Goal. Introduce night unaided operations.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Aircraft lighting and use.
Radar altimeter use.
CRM.
Night scan.
Prelaunch communications with light signals.
Emergency procedures at night.

Introduce/Evaluate:
Takeoff to a hover.
Transition to forward flight.
Normal approach.
Vertical landing from a hover.
Running landing.
Steep approach.
Power recovery autorotations.
AFCS off flight/approach/landing.
Simulated single engine approach/landing.
ETS approach/landing.

Performance Standards. Pilot shall demonstrate the ability to operate the aircraft and systems during night operations.

Prerequisite. FAM-116 and appropriate FRS CBT lessons.

2. Instruments (INST)

a. Purpose. To develop proficiency in instrument flight procedures under instrument conditions using all navigation aids.

b. General

(1) Pilots will find maneuver descriptions in the NATOPS Instrument Flight Manual and explanations in the FRS CH-46E Standardization Manual.

(2) Pilots will conduct all instrument flights day or night under actual instrument conditions or hooded in the case of simulated instrument flight. Instructor pilots shall discuss aircraft lighting prior to RAC's first night flight.

(3) All flights will terminate with an instrument approach when practical.

(4) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

(5) Prerequisite. Appropriate FRS CBT program lessons.

c. Crew Requirement

(1) Simulator Training - Two pilots/Qualified Instructor.

(2) Flight Training - IP/RAC/CC or IP/REF/CC.

d. Ground Training. All pilots that do not possess a current instrument rating shall complete IGS prior to INST-126.

e. Flight and Simulator Event Training (3 Flights, 4.5 Hours/3 Events, 6.0 Hours).

SINST-120 2.0 E WST S

Goal. Introduce Communication and Navigation Control System (CNCS) Procedures.

Requirement

Discuss:
CNCS System Architecture.
CNCS Components.

Demonstrate/Introduce:
Function Keys.
Line Select Keys (LSK)
Dedicated Keys.
HHSI Modes.
Apply/Check Power.

Check System Status.
Loading/Creating a Flight Plan.
Changing Radios/Scan/Presets.
Changing TACAN.
Changing IFF/Mode 3/Mode C.
Direct-to a Waypoint.
Holding Pattern.
Bearing/Distance Waypoint from know Position.

Emergencies: System Failures and Trouble Shooting CNCS.

Performance Standards. Pilot shall demonstrate all basic knowledge of the CNCS IAW CH-46E NATOPS.

External Syllabus Support. WST/APT.

SINST-121 2.0 R,MR E WST S (N*)

Goal. Introduce radio, TACAN, ADF, and radar altimeter procedures.

Requirement

Review:
Instrument checklist.
ITO.
Altitude hold procedures.
Level speed change.
Timed turns.
S-1 patterns.
Full/partial panel unusual attitude recoveries.
Partial panel.
Oscar pattern.
Instrument autorotation.

Introduce/Evaluate:
TACAN procedures.
LF/UHF ADF procedures.
GCA procedures.
In flight emergencies.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument Manual.

Prerequisite. SINST-120, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

SINST-122 2.0 R,MR E WST S (N*)

Goal. Practice basic instrument flight and coordination maneuvers.

Requirement

Discuss:
- Maneuver limitations.
- Compass system control panel.
- Instrument scan.

Introduce/Evaluate:
- Instrument checklist.
- Level speed change.
- Timed turns (standard and one-half standard rate).
- Climbs and descents.
- Unusual attitudes.
- Partial panel at cruise altitude.
- Oscar pattern.
- Vertical S-1 pattern.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument manual.

Prerequisite. SINST-121, appropriate FRS CBT lessons.

External Syllabus Support. WST/APT.

INST-123 1.5 R,MR E 1 CH-46E/WST A/S (N*)

Goal. Practice TACAN/GCA procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- All TACAN Procedures
- GCA (PAR/ASR) Procedures
- Emergencies in Approach Environment
- Communication w/Approach Controllers

Introduce/Evaluate:
- TACAN point-to-point navigation.
- TACAN tracking, radial changes.
- TACAN holding.
- TACAN arcing.
- TACAN approach.
- TACAN missed approach.
- GCA (PAR, ASR) procedures.
- TACAN departure.

Review/Evaluate:
- Instrument takeoff.
- UHF/ADF orientation.

Emergencies: As required.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN/GCA approach to an approved military field within the parameters set forth in the Instrument Manual.

Prerequisite. SINST-122, appropriate FRS CBT program lessons.

External Syllabus Support. Operable TACAN, GCA approach.

INST-124 1.5 R,MR E 1 CH-46E/WST A/S (N*)

Goal. Introduce enroute procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Fuel management.
- Internal fuel tank procedures.

Introduce/Evaluate:
- GCA (ASR).
- Cross-Country Procedures.
  - Flight logs.
  - File flight plan.
  - Departure/airways/arrival procedures.
  - Close out flight plan.

Review/Evaluate:
- TACAN procedures.
- GCA (PAR).
- Basic instruments.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN/GCA approach an approved military field within the parameters set forth in the Instrument manual.

Prerequisite. INST-123, appropriate FRS CBT program lessons.

External Syllabus Support. Operable TACAN, GCA Approach.

INST-125 1.5 R,MR E 1 CH-46E/WST A/S (N*)

Goal. RAC Instrument Review or Refresher Instrument Check.

Requirement

Review/Evaluate: All previously introduced instrument maneuvers and procedures.

Emergencies: Perform as required.

Performance Standards. Pilot shall demonstrate the ability to perform instrument maneuvers safely IAW Instrument Flight Manual.

Prerequisites. INST-124, appropriate instrument minimums per OPNAVINST 3710.7.

External Syllabus Support. Operable TACAN, GCA approach.

3. Navigation (NAV)

a. Purpose. To develop navigation skills using charts and maps.

b. General

(1) Pilots will find information on Navigation in the FRS CH-46E Standardization Manual and the Air NTTP 3-22.3 CH-46E

(2) All Conversion aircrews qualified and current in navigation in previous type aircraft are exempt.

(3) Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

c. Crew Requirement. IP/RAC/CC.

d. Ground Academics. All RACs shall complete the Navigation Class and PFPS Advanced Class prior to NAV-131

e. Flight and Simulator Event Training (3 Flights, 4.5 Hours)

NAV-131 1.5 E 1 CH-46E A

Goal. Introduce day visual navigation.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E).
- CRM.
- Lost plane procedures.
- Time/distance checks.
- Distance estimation and map legend information.
- Map Preparation.
- METT-TSL considerations on route selection.

Introduce:
- Navigation procedures emphasizing use of terrain, contour features, and triangulation to determine position.
- Use of 1:250,000 maps.
- Point-to-point navigation to at least 5 checkpoints at 200 to 500 feet AGL. Remain within 500 meters of course line.

Performance Standards. Pilot shall perform a navigation route utilizing a 1:250,000 map remaining within 500 meters of

course throughout the route that consists of a minimum of 5 checkpoints.

Prerequisite. FAM-112, FRS Navigation class.

NAV-132 1.5 E 1 CH-46E A

Goal. Review NAV-131.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E).
- Comfort level.
- Navigation techniques.
- Map preparation.
- Boundaries.
- Wind correction for DR navigation.
- In flight route changes.
- Onboard navigation systems.
- Basic Survivability Concepts.

Plan and navigate at 200-300 feet AGL to a minimum of 6 predetermined terrain features using 1:50,000 maps. Remain within 200 meters of course line. Use appropriate onboard navigation systems, if available.

Performance Standards. Pilot shall perform a navigation route utilizing a 1:50,000 map remaining within 200 meters of course for a minimum of 6 checkpoints.

Prerequisite. NAV-131.

NAV-133 1.5 E 1 CH-46E A N*

Goal. Introduce visual navigation at night.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E)
- CRM.
- Special characteristics of night NAV.
- Map preparation/mission planning.
- Onboard navigation systems.
- Aircraft Signatures.

Introduce:
- Dead reckoning navigation to at least 4 points using pre-computed times and airspeeds.
- Altitude at 500-1,000 feet AGL.

Review: 1:250,000 maps/onboard navigation systems.

Performance Standards. Pilot shall perform a night navigation route utilizing a 1:250,000 map remaining within 500 meters of course for a minimum of 4 checkpoints at night.

Prerequisite. FAM-117 and NAV-132.

4. Confined Area Landings (CAL)

a. Purpose. To develop takeoff and landing skills in confined areas.

b. General. Maneuver descriptions; refer to paragraph 131.1b.

(1) Pilots will find information on Confined Area Landings in the CH-46E NATOPS Flight Manual, FRS CH-46E Standardization Manual, and the Air NTTP 3-22.3 CH-46E.

(2) Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

c. Crew Requirement. IP/RAC/CC or IP/REF/CC.

d. Ground Training. Refer to paragraph 131.1d.

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours/1 Event, 2.0 Hours)

SCAL-140 2.0 E WST S

Goal. Introduce confined area work.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E).
- CRM.
- Aircraft clearance.
- Zone brief.

Introduce/evaluate:
- Confined area approach.
- Confined area landing.
- Masking/unmasking.
- Low level quick stops.
- Bunts/rolls.
- Low level flight.

Emergencies:
- ETS operation.
- Emergency landing in trees.
- Others as required.

Performance Standards. Pilot shall perform landing to a confined area emphasizing obstacle clearance and TERF Maneuvers IAW Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E.

Prerequisite. Appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

CAL-141 1.5 R E 1 CH-46E A

Goal. Introduce confined area work.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E)
- CRM.
- Aircraft clearance.
- Zone brief.
- Confined area approaches and landings.
- Aircraft vulnerability.

Demonstrate: Mainmount landing.

Introduce/Evaluate:
- Confined area approach.
- Confined area landing.
- Obstacle Approach.
- Waveoff.
- Obstacle takeoff.

Emergencies:
- Emergency landing in trees.

Performance Standards. Pilot shall perform confined area landings to an unprepared surface.

Prerequisite. FAM-116, appropriate FRS CBT lessons.

External Syllabus Support. CAL zones.

CAL-142 1.5 E, 2 ACFT

Goal. Conduct multiple aircraft approaches, landings and departures to a confined area.

Requirement

Discuss: (ref: CH-46E NATOPS Flight Manual, CH-46E FRS Standardization Manual, Air NTTP 3-22.3 CH-46E).
- CRM.
- Section cruise principles.
- Section formation types.
- Section approaches to a confine area.
- Section landings and departures to a confined area.
- Lead change.

Evaluate:
- Section cruise formation.
- Section cruise approaches and landings to a confined area.

Section cruise departures from a confine area.
Lead change.

Review: FORM-151.

Performance Standards. Pilot shall perform cruise formation flight and multiple cruise landings to a confined area or landing zone. Pilot shall fly established pattern, recognize closure rate to landing point, remain oriented in zone, maintain safe obstacle clearance, and maintain section integrity during approach and landing.

Prerequisite. CAL-141, FORM-152, FAM-116.

External Syllabus Support. CAL zone to accommodate a section.

5. Formation (FORM)

a. Purpose. To develop parade and cruise formation principles and techniques.

b. General

(1) Pilots will find information on Formation in the CH-46E NATOPS Flight Manual, FRS CH-46E Standardization Manual and the Air NTTP 3-22.3 CH-46E.

(2) Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

c. Crew Requirements. IP/RAC/CC or IP/REF/CC.

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours/1 Event, 2.0 Hours)

SFORM-150 2.0 E WST S (NS)

Goal. Introduce day formation procedures.

Requirement

Discuss:
Aircraft lighting and use.
Radar altimeter use.
CRM.
Day scan.
Visual cues for day formation.
Depth perception/relative motion.
Hazards peculiar to formation.

Introduce/Evaluate:
Section takeoff.
Cruise formation.
Parade formation.
Breakup and Rendezvous.
Running rendezvous.
Carrier rendezvous.

Crossovers.
Cruise crossovers.
Parade crossovers.
Turns.
Cruise turns.
Parade turns.

Lead Changes.
Cruise lead changes.
Parade lead changes.
Section landings.

Emergencies: Electrical system malfunctions or as required.

Performance Standards. Pilot shall perform confined area landings to an unprepared surface.

Prerequisite. SCAL-140, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

FORM-151 1.5 R E 2 CH-46E A

Goal. Introduce formation procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E).
Cruise principles.
Radius of turn concept.
Formation types.
Break up and rendezvous.
Overrun.

Introduce/Evaluate:
Cruise formation.
Cruise turns.
Section cruise confined area takeoffs and landings.
Lead change.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform cruise formation flight and 5 section cruise landings to an unprepared surface.

Prerequisite. CAL-141, appropriate FRS CBT Lessons.

External Syllabus Support. CAL zones.

FORM-152 1.5 2 E CH-46E A

Goal. Introduce parade formation procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E).
Hand/light signals.
Parade principles.

Introduce/Evaluate:
Parade formation.
Crossovers.
Parade turns.
Lead changes.
Section parade takeoffs.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform parade formation flight and section parade landings.

Prerequisite. FORM-151, appropriate FRS CBT lessons.

External Syllabus Support. Prepared surface runway.

6. External Loads (EXT)

a. Purpose. To develop skills necessary for external cargo operations.

b. General. Refer to paragraph 241.1b.

(1) Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

(2) Pilots will find information on external operations in the CH-46E NATOPS Flight Manual, FRS CH-46E Standardization Manual and the Air NTTP 3-22.3 CH-46E.

(3) Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

c. Crew Requirements. IP/RAC/CC.

d. Flight and Simulator Event Training (1 Flight, 1.5 Hours/1 Event, 2.0 Hours)

SEXT-160 2.0 E WST S

Goal. Introduce day external cargo operations.

Requirement

Discuss:
HST signals.
Power available versus power required limitations.
CRM.
Crew comfort level.
Obstacle clearance.

Load and pendant.

Introduce/Evaluate:
Configure aircraft for external cargo.
Approach to pickup zone.
Cargo hookup.
Departure from pickup zone.
Enroute phase.
Cargo delivery.
Simulated hoist operations.
External cargo operations to a confined area.
Obstacle takeoff with external cargo.
Confined area landings.
Steep approach to a confined area.

Emergencies: Perform as required.
Failure of one engine with an external load.
Loss of ICS.
Aerodynamically unstable/oscillating loads.
Cargo jettison.

Performance Standards. Pilot shall perform 5 pickups and dropoffs to a confined zone.

Prerequisite. SCAL-140, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

EXT-161 1.5 E 1 CH-46E A

Goal. Introduce external cargo operations.

Requirement

Discuss:
Inadvertent IMC while conducting external operations.
Approach to pickup zone.
Cargo hookup.
Departure from pickup zone.
Enroute phase.
Cargo delivery.
External operations to a confined area.
Obstacle takeoff with external cargo.
Standard terminology.
Hook/pendant preflight.
Cargo jettisoning.
Loss of ICS.

Introduce/Evaluate:
Pickup and delivery of FMF equipment (when available).
External cargo operations to a confined area.
Obstacle takeoff with external cargo.

Review/Evaluate:
Confined area landings.
Steep approach to a confined area.
Obstacle takeoff.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform a minimum of five pickups and dropoffs of external load within 10 meters to a confined area.

Prerequisite. CAL-141, appropriate FRS CBT lessons.
External Syllabus Support. HST, external load, pendant, hook, and CAL zones.

7. Terrain Flight (TERF)

a. Purpose. To introduce the PUI to Terrain Flight (TERF) operations and maneuvers.

b. General

(1) Maneuver descriptions; refer to CH-46E FRS Standardization Manual and Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E.

(2) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirements. IP/RAC/CC/AGO or IP/REF/CC/AGO.

d. Ground/Academic Training. All RACs shall complete the TERF Class prior to TERF-170.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours

TERF-171 1.5 R, MR E 1 CH-46E A

Goal. Introduce TERF operations.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E).
- CRM.
- Aircraft clearance.
- Emergencies in TERF environment.
- TERF maneuvers.

Introduce/evaluate:
- Maximum performance takeoff.
- Performance checks.
- Masking/unmasking.
- Low level quick stops.
- Bunts/rolls.
- Low level flight/turns.
- Zoom climb.
- Spiral climbout/approach.
- Low level approach.
- Offset approach.

Emergencies:
ETS operation.
Emergency landing in trees.
Others as required.

Performance Standards. Pilot shall perform TERF maneuvers emphasizing obstacle clearance IAW Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E.
Prerequisite. FAM-116, appropriate FRS CBT program lessons.

External Syllabus Support. Low level TERF area in controlled airspace.

8. Night Systems (NS)

a. Purpose. Introduce Pilot to NS in performing all basic FAM, NAV, and CAL maneuvers under a HLL Condition.

b. General

(1) Pilots will find information on Formation in the FRS CH-46E Standardization Manual, CH-46E NATOPS Flight Manual, MAWTS-1 NS Manual and the Air NTTP 3-22.3 CH-46E.

(2) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirement. IP/RAC/CC/AGO or IP/REF/CC/AGO

d. Ground/Academic Training

(1) All pilots shall complete the Nite Lab and NS Class prior to SNS-180.

(2) All pilots shall be FAM Stage, NAV Stage, and CAL Stage complete before SNS-180.

e. Flight and Simulator Event Training (3 Flights, 5.0 Hours/1 Event, 2.0 Hours)

SNS-180 2.0 E WST S NS

Goal. Introduce NS procedures.

Requirement

Introduce/Evaluate:
Goggle/Degoggle.
NS eyelane/goggle preflight.
Aircraft lighting procedures.
Scan techniques.
Vertical takeoffs/landings.
Hover patterns.
Normal approaches.

Emergencies: Any previously introduced emergency as appropriate.

Performance Standards. Pilot shall practice NS procedures and scan technique to prepare for aircraft events.

Prerequisite. SFAM-107, Nite Lab, Night Systems class and appropriate FRS CBT lessons.

External Syllabus Support. WST/APT, Night Vision Goggles.

NS-181 2.0 R E 1 CH-46E A NS

Goal. Introduce NS flight.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, MAWTS-1 NS Manual)
- CRM.
- Crew comfort levels.
- NS failures.
- Depth perception.
- Aircraft lighting.
- Emergency procedures.
- MAWTS-1 NS Manual.
- ANVIS 6 or 9 NS, and NS HUD (HMD).

Introduce:
- Use of NS at an unlighted outlying field under ambient light levels greater than .0022 LUX as depicted by the computer generated Light Level Planning Calendar.
- Use and wear of NS while performing taxi, basic air work, low work, and touch-and-go pattern work.

Emergencies: Perform as required.

Performance Standards. Pilot shall practice basic FAM maneuvers safely while wearing NS.

Prerequisite. FAM-117, Nite Lab, Night Systems class, appropriate FRS CBT lessons.

External Syllabus Support. NS, unlit airfield.

NS-182 1.5 E 1 CH-46E A NS

Goal. Introduce NS navigation.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E, MAWTS-1 NS Manual)
- Map preparation.
- Cockpit interior lighting.
- CRM.
- Crew comfort levels.
- Inadvertent IMC.
- NS navigation techniques.
- Onboard navigation systems.

Aircraft survivability equipment.

Introduce/Evaluate:
Navigation to at least five points using 1:250,000 maps.
Altitude 200-500 feet AGL.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform a navigation route utilizing NS remaining within 500 meters of course for a minimum of five checkpoints.

Prerequisite. NAV-133, NS-181.

External Syllabus Support. NS.

NS-183 1.5 E 1 CH-46E A NS

Goal. Introduce NS CALs.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS failures.

Introduce/Evaluate: NS confined area landings/takeoffs at various unlighted CAL zones.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform confined area landings to an unprepared surface utilizing NS.

Prerequisite. CAL-141, NS-182.

External Syllabus Support. NS, CAL zones.

9. Review (REV)

a. Purpose. To demonstrate proficiency in performing Core Skill Introduction events per NATOPS and other appropriate publications.

b. General. All pilots under instruction shall complete SREV-190. Moreover, all CH-46 pilots shall fly this event once per month if an approved simulator is available. If an approved simulator is not available, the squadron NATOPS officer may substitute a written examination on normal and emergency procedures.

(1) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

(2) Prerequisite. Refer to paragraph 231.1d.

c. Crew Requirements. IP/RAC/CC.

d. Ground Training. Completion of NATOPS closed book examination.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours/1 Event, 2.0 Hours)

SREV-190 2.0 R E WST S

Goal. Review previous maneuvers and emergencies.
Requirement

Review/Evaluate:
FAM stage maneuvers.
Instrument stage maneuvers.
Confined area landings.

Emergencies: Perform all previously introduced emergencies.

Performance Standards. Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS and FRS Standardization Manuals.

Prerequisite. Appropriate FRS CBT program lessons. All previous stages complete.

External Syllabus Support. WST/APT.

REV-191 1.5 E 1 CH-46E A

Goal. Review previous maneuvers and emergencies.

Requirement

Review/Evaluate: All maneuvers from all previous Core Skill Introduction flights.

Emergencies: All previously introduced emergencies.

Performance Standards. Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS and FRS Standardization Manuals.

Prerequisite. SREV-190.

10. Core Skill Introduction Check (CSIX)

a. Purpose. The PUI will demonstrate proficiency in performing duties as a Core Skill Introduction complete copilot per this syllabus, NATOPS and other appropriate publications.

b. General

(1) At the completion of CSIX-192, the PUI shall be designated a Helicopter Second Pilot (H2P) in the CH-46E.

(2) The PUI is responsible for any/all maneuvers and emergencies contained in the Core Skill Introduction phase.

(3) Prerequisite. The PUI shall meet all CBT and NATOPS prerequisites prior to this flight.

c. Crew Requirements. IP/RAC/CC or IP/REF/CC.

d. Academic Training. Completion of open and closed book examinations.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

CSIX-192 1.5 R,MR E 1 CH-46E A

Goal. RAC/Refresher NATOPS evaluation.

Performance Standards. Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS, Air NTTP 3-22.3 and FRS Standardization Manuals.

Prerequisite. REV-191.

132. CORE SKILL BASIC PHASE

1. Familiarization (FAM)/Instruments (INST)

a. Purpose. To review day and night FAM maneuvers, navigation procedures, basic instrument procedures, and introduce/evaluate ECCS normal and emergency procedures.

b. General

(1) Pilots will find FAM maneuver descriptions in the NATOPS Manual and FRS Stan manual.

(2) The NATOPS Instrument Flight Manual (NAVAIR 00-80T-112) defines basic instrument procedures.

(3) The NATOPS (A1-H46AE-NFM-300 VOL. 1) describes normal and emergency procedures.

(4) Pilots shall discuss CRM as applicable to each event.

(5) Aircrew shall be NSQ for the appropriate light level, or NS-251 complete and instructed by an NSI for events conducted on NS. If not NSQ for the appropriate light level, FAM-201 shall be conducted in the local pattern.

(6) Prerequisite. CSIX-192.

c. Minimum Crew Requirements. P/CP/CC.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours /1 Simulator Event, 2.0 Hours)

SFAM/INST-200 2.0 WST/1 CH-46E S/A (N)

Goal. Review day and night familiarization maneuvers and basic instrument procedures.

Requirement

Discuss:
- Familiarization maneuvers.
- Aircraft lighting and use.
- Night scan.
- Night fixation.
- CRM.
- Basic instrument procedures.
- NS HUD.
- ASE.
- CDNU operations and precision navigation equipment.

Introduce:
- ASE.
- Integrated comm/nav equipment.
- NS HUD.
- ARC-210 Remote head.

Review:
- Familiarization maneuvers.
- Operations at lighted and unlighted fields.
- Basic instrument procedures to include turn patterns, vertical S-1 patterns, Oscar patterns, partial panel flight, and instrument autorotations.
- Instrument Approaches.
- Emphasize emergency procedures that pilot cannot fly in the aircraft; e.g., dual engine failure, full autorotation, flex shaft failure, ECA malfunctions, compressor stalls, etc.

Performance Standards. IAW NATOPS/Instrument Flight Manuals.

External Syllabus Support. WST/APT (May be accomplished in static aircraft).

FAM/INST-201 2.0 R 1 CH-46E A (N)

Goal. Review day and/or night familiarization maneuvers, navigation above 200 feet.

Requirement

Discuss:
- CRM.
- Local course rules.
- Map preparation.
- Route selection.
- Night scan.
- Night fixation.

Review:
FAM stage maneuvers.
Navigation above 200 feet using a minimum of five checkpoints.
Emergency procedures, as required.
CNCS operation.

Performance Standards. Pilot shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, established pattern checkpoints, recognize closure rate to a landing point, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. SFAM/INST-200.

External Syllabus Support. Landing areas.

FAM/INST-202 1.5 R 1 CH-46E A (N)

Goal. Review day and/or night basic instrument scan and procedures.

Requirement

Discuss:
Aircraft lighting and use.
Basic instrument procedures.
IFR planning and flying procedures.
CRM.
Map preparation.
Route selection.

Review:
Basic instrument procedures to include turn patterns, vertical S-1 patterns, Oscar pattern, partial panel flight, and instrument autorotations.
Instrument approaches.
Instrument scan.
IFR planning and flying procedures.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern and route checkpoints, recognize closure rate to landing point, and land within two rotors of intended point of landing.

Prerequisite. SFAM/INST-200.

External Syllabus Support. NAVAIDS and/or IFR capable facility.

2. Confined Area Landings (CAL)

a. Purpose. To develop proficiency in takeoffs and landings in a confined area.

b. General. Pilots will find maneuver descriptions in the NATOPS Flight Manual. Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements. P/CP/CC.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours/1 Simulator Event, 2.0 Hours)

SCAL-210 2.0 1 WST S

Goal. Conduct day and night single and multiple aircraft confined area landings, tactical approaches and departures.

Requirement

Discuss:
- Low/high threat tactical approaches, landings and departures to a confined area.
- Power settling/settling with power.
- Low altitude emergency procedures (e.g., landing in trees).
- Power requirements at high gross weights to affect safe takeoffs/landings.
- LZ brief/evaluation.

Introduce:
- Low/high threat tactical approaches.
- Landings and departures to a confined area.
- CRM.
- Crew comfort level.
- Night fixation.
- Effects of wind.
- Landing in valleys and canyons.
- Crosswind, upslope, and downslope landings with respect to tail clearance. Use of taxi/forward cyclic trim position.

Review: CAL-141.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate Power Management, maintain safe obstacle clearance, and land within two rotors of intended point of landing.

External Syllabus Support. WST/APT.

CAL-211 1.5 1 CH-46E A

Goal. Conduct single aircraft confined area landings, tactical approaches and departures.

Requirement

Discuss:

Low/high threat tactical approaches, landings and departures to a confined area.
Power settling/settling with power.
Low altitude emergency procedures (e.g., landing in trees).
Power requirements at high gross weights to effect safe takeoffs/landings (power checks).
Rotor blade clearances (blade walk).
LZ brief/evaluation.

Introduce:
Low/high threat tactical approaches.
Landings and departures to a confined area.
CRM.
Crew comfort level.
Effects of wind.
Landing in valleys and canyons.
Crosswind, upslope, and downslope landings with respect to tail clearance.
Use of taxi/forward cyclic trim position.

Review: CAL-141.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate Power Management, maintain safe obstacle clearance, and land within two rotors of intended point of landing.

Prerequisite. SCAL-210.

External Syllabus Support. CAL zones.

CAL-212 1.5 R 2+ ACFT A

Goal. Conduct multiple aircraft tactical approaches, landings and departures to a confined area.

Requirement

Discuss:
Section and division tactical approaches.
Landings and departures to a confined area in all threat environments.

Introduce:
Section/division tactical approaches (if applicable).
Landings and departures to a confined area in all threat environments.

Review: FORM-151.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate power management, maintain safe obstacle clearance, land within two

rotors of intended point of landing (lead), and maintain section integrity during approach and landing (wingman).

Prerequisite. CAL-211.

External Syllabus Support. CAL zone that accommodates multiple aircraft.

3. External Cargo Operations (EXT)

a. Purpose. To develop proficiency in day external cargo operations and introduce external cargo operations in a confined area with close coordination of a Helicopter Support Team (HST).

b. General. Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements. P/CP/CC.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SEXT-220 2.0 WST S

Goal. Conduct day external load hookups and drops to a confined area.

Requirement

Discuss:
CRM during external load operations.
Tactical considerations during external lift operations.
Emergency procedures with external loads.

Review: External load hookups and drops to a confined area.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize solid instrument scan, demonstrate proper CRM/voice commands, properly respond to crew positioning calls, recognize closure/descent rates, maintain briefed clearance below load, maintain situational awareness of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of HOGE requirements, complete a minimum of five hookups and drops, place load within 5 meters of intended point of drop.

External Syllabus Support. WST/APT/operable TEN.

EXT-221 1.5 R 1 CH-46E A

Goal. Review external load operations from a confined area.

Requirement

Discuss:
CRM during external load operations.
Tactical considerations during external lift operations.
Hoist and winch operations.
Emergency procedures during external operations.
Command jettisoning procedures.
HST Brief.

Review: EXT-161.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize solid instrument scan, demonstrate proper CRM/voice commands, properly respond to crew positioning calls, recognize closure/descent rates, maintain briefed clearance below load, maintain situational awareness of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of HOGE requirements, complete a minimum of five hook ups and drops, place load within 5 meters of intended point of drop.

Prerequisite. SEXT-220, CAL-211.

External Syllabus Support. HST, external load, LZ, hook and pendant.

4. Formation Flight (FORM)

a. Purpose. To review formation and introduce tactical formation maneuvering.

b. General

(1) Pilots shall discuss CRM as applicable to each event.

(2) Initial/refresher flights shall be flown during the day. Subsequent flights may be flown at night if proficient in the day sortie and NSQ for the appropriate light level.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event and Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SFORM-230 2.0 WST S

Goal. Review section formation and introduce tactical section/division formation maneuvering.

Requirement

Discuss:
CRM.
Crew comfort level.
Closure rate.
Lead changes (to include EMCON).
Common terminology.
Division formation, emphasize dash-3 position.
Tactical formation maneuvering.
Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.
Intra and inter aircraft communications.
Inadvertent IMC.

Introduce:
Break turns, center turns, pinch/dig, cover, TAC turns, in-place turns, split turns, cross turns.
Combat spread and combat cruise.

Review:
Parade formation.
Section takeoffs/landings.
Cruise principles, crossover, break-up and rendezvous, and lead changes.

Performance Standards. Pilots shall exercise appropriate CRM, maintain situational awareness, maintain section integrity and mutual support, maintain appropriate cruise formation and rotor separation throughout maneuvers, utilize radius of turn principles, and employ appropriate commands to maneuver flight.

External Syllabus Support. WST/APT/operable TEN.

FORM-231 1.5 R 2+ CH-46E A (NS)

Goal. Review formation and introduce tactical formation maneuvering.

Requirement

Discuss:
CRM.
Crew comfort level.
Closure rate.
Lead changes (to include EMCON).
Common terminology.
Division formation, emphasize dash-3 position.
Tactical formation maneuvering.
Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.
Intra and inter aircraft communications.
Inadvertent IMC.

Introduce:
Break turns, center turns, pinch/dig, cover, TAC turns, in-place turns, split turns, cross turns.
Combat spread and combat cruise.

Review: Cruise principles, turn patterns, crossover, break-up and rendezvous, and lead changes.

Performance Standards. Pilots shall exercise appropriate CRM, maintain situational awareness, maintain section integrity and mutual support, maintain appropriate cruise formation and rotor separation throughout maneuvers, utilize radius of turn principles, and employ appropriate commands to maneuver flight.

Prerequisite. SFORM-230.

5. Terrain Flight (TERF)

a. Purpose. To qualify the PUI in TERF operations/navigation procedures.

b. General. TERF 241-243 instructional flights require a TERF Instructor. Successful completion of TERF-243 constitutes TERF Qualified. A qualification letter signed by the commanding officer stating the pilot is TERFQ is required. The original shall be placed in the pilots NATOPS jacket and a copy in the pilots APR with a corresponding logbook entry. T&R Program Manual establishes TERF altitude restrictions and currency requirements.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (3 Flights, 4.5 Hours/1 Event, 2.0 Hours)

STERF-240 2.0 WST S

Goal. Conduct single and multiple aircraft TERF maneuvers in the low level and contour profiles.

Requirement

Discuss:
CRM during TERF.
Crew comfort level during TERF.
Emergency procedures in TERF environment.
TERF maneuvers (bunts, rolls, quick-stops, masking and unmasking).
Differences between low level, contour and NOE flight.
Map preparation and route selection.
Mission planning systems.
Demonstrate effective cockpit management for precision navigation.

Introduce: Contour and low level flight.

Review: TERF maneuvers (bunts, rolls, quick-stops, masking and unmasking).

Performance Standards. Pilots shall plan and fly a route to a minimum of six checkpoints below 200 feet AGL, TERF navigation utilizing 1:250,000 and 1:50,000 scale maps as appropriate, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation (GPS as secondary source), utilize proper terminology, as lead retain situational awareness of wingman position and drive section appropriately, as wingman retain situational awareness during navigation, TAC FORM maneuvers utilized properly to control flight.

External Syllabus Support. WST/APT/operable TEN.

TERF-241 1.5 1 CH-46E A

Goal. Conduct TERF maneuvers in low level and contour profiles.

Requirement

Discuss:
- CRM during TERF.
- Crew comfort level during TERF.
- Emergency procedures during TERF.
- TERF maneuvers (bunts, rolls, quick-stops, masking/unmasking).
- Differences between types of TERF flight.
- Map preparation (hazards, etc).
- Low altitude emergencies.

Introduce: TERF maneuvers (bunts, rolls, quick-stops, masking/unmasking).

Review: Blade walk/power checks.

Performance Standards. Ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, and utilize proper terminology.

Prerequisite. STERF-240.

External Syllabus Support. TERF area (special use airspace preferred).

TERF-242 1.5 1 CH-46E A

Goal. Navigate a TERF route in low level and contour profiles.

Requirement

Discuss:
- CRM during TERF navigation.

Common terminology used during TERF navigation.
Hazard maps.
Tactical map preparation (1:50,000 & 1:250,000).
Time/distance checks.
CNCS employment considerations.

Introduce:
Navigate a TERF route with a minimum of five checkpoints in the low level and contour profile, and remain oriented within 500 meters of course line.
Onboard navigation systems.

Review: TERF-241.

Performance Standards. Pilots shall plan and fly a route to a minimum of five checkpoints at or below 200 feet AGL, TERF navigation utilizing 1:250,000 and 1:50,000 scale maps as appropriate, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation (GPS as secondary source), utilize proper terminology.

Prerequisite. TERF-241.

External Syllabus Support. Approved TERF route (special use airspace preferred).

TERF-243 1.5 R 2+ ACFT A

Goal. Tactical formations and navigation in the low level and contour profiles in the TERF environment.

Requirement

Discuss:
CRM during formation flight in TERF environment.
Common terminology.
Altitude awareness.
NOE considerations.

Introduce: Tactical formations in the low level and contour profiles.

Review: TERF-242 and FORM-231.

Performance Standards. Pilots shall plan and fly a route to a minimum of five checkpoints as lead below 200 feet AGL, properly control flight utilizing TACFORM maneuvers in the TERF environment, TERF navigation utilizing 1:50,000 and 1:250,000 scale maps as appropriate, remain oriented on route within 200 meters, ensure effective CRM for navigation, altitude and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section

appropriately, and as wingman, retains situational awareness during navigation.

Prerequisite. TERF-242.

External Syllabus Support. Approved TERF route (special use airspace preferred).

6. NS High Light Level (HLL)

a. Purpose. To develop skill in the use of NS under light levels greater than .0022 lux (HLL)) as predicted by the Solar Lunar Almanac Prediction (SLAP) and to qualify the PUI in NS HLL operations.

b. General

(1) All instructional flights require a Night Systems Instructor (NSI).

(2) Successful completion of NS-257 constitutes Night Systems Qualified (NSQ) HLL. A qualification letter signed by the commanding officer stating the pilot is NSQ HLL is required to be qualified to carry troops under HLL conditions. The original shall be placed in the pilot's NATOPS jacket, and a copy in his APR with a corresponding logbook entry.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (7 Flights, 10.5 Hours/1 Simulator Event, 2.0 Hours)

SNS-250 2.0 WST S NS

Goal. Introduce NS single and multiple aircraft FAM, CALs, and TERF/Navigation in HLL.

Requirement

Discuss:
- CRM during NS CAL operations.
- Crew comfort level during NS CAL operations.
- Scan technique during FAM maneuvers.
- NS low altitude emergencies.

Introduce:
- Section CALs in HLL.
- NS HUD operations.

Review:
- NS preflight/set up.
- Single aircraft CALs in HLL.

Performance Standards. Pilots shall plan and fly a route to a minimum of four checkpoints below 200 feet AGL, maintain effective NS/instrument scan, recognize proper closure rate

with intended point of landing, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during navigation, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

External Syllabus Support. WST/APT/operable TEN.

NS-251 1.5 R 1 CH-46E A NS

Goal. Review NS single aircraft CALs in HLL.

Requirement

Discuss:
- CRM during NS CAL operations.
- Crew comfort level during NS CAL operations.
- NS failures at low altitudes.
- Light level planning requirements.
- Inadvertent IMC.
- NS preflight/set up.
- LZ brief and evaluation.

Review: Single aircraft CALs in HLL.

Performance Standards. Pilots shall maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, retain positive aircraft control, demonstrate effective cockpit management, utilize proper terminology, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. SNS-250.

External Syllabus Support. NS compatible CAL zones.

NS-252 1.5 2 CH-46E A NS

Goal. Conduct NS formation flight in HLL.

Requirement

Discuss:
- CRM during NS formation operations.
- NS formation techniques.
- Aircraft lighting during NS formation.
- Inadvertent IMC.
- NS combat cruise.
- NS failures during formation flight.

Introduce: NS formation flight (e.g., turn pattern).

Review: FORM-231, CNCS employment if available, turn patterns and break up/rendezvous.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, demonstrate effective cockpit management, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, and wingman maintains proper NS combat cruise position.

Prerequisite. FORM-231, NS-251.

NS-253 1.5 R 2 CH-46E A NS

Goal. Conduct NS tactical section approaches, landings, and departures to a confined area in HLL.

Requirement

Discuss:
- CRM during NS section CALs.
- Section tactical approach, landings and departures to a confined area while using NS in HLL.
- LZ brief and evaluation.

Introduce: Section tactical approach, landings and departures to a confined area while using NS in HLL.

Review: CAL-212, NS-251 and NS-252.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. CAL-212, NS-252.

External Syllabus Support. NS compatible CAL zones that accommodate multiple aircraft.

NS-254 1.5 3+ ACFT A NS

Goal. Conduct NS division formation and CALs emphasizing the dash three position.

Requirement

Discuss:
CRM during NS formation and CALs.
NS division CAL techniques.
NS division formation techniques.
Inadvertent IMC on NS.
Obstacle clearance.
LZ brief and evaluation.

Introduce:
NS division formation.
NS division CALs.

Review: NS-252 and NS-253.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. NS-253.

External Syllabus Support. NS compatible CAL zones that accommodate multiple aircraft.

NS-255 1.5 1 CH-46E A NS

Goal. Conduct NS TERF navigation.

Requirement

Discuss:
CRM during NS TERF navigation.
NS navigation techniques.
Use of onboard navigation systems.
Moon illumination/shadow effects on NS navigation.
NS low altitude emergencies.

Introduce:
NS TERF navigation.
Navigate a route below 200 feet AGL with at least 4 checkpoints and remain oriented within 500 meters of course line.

Review: TERF-243. Use of onboard navigation systems.

Performance Standards. Pilots shall plan and fly a route to a minimum of four checkpoints below 200 feet AGL, maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, remain oriented on route

within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology.

Prerequisite. TERF qualified and NS-251.

External Syllabus Support. Approved TERF route (special use airspace preferred).

NS-256 1.5 2 CH-46E A NS

Goal. Conduct NS TERF formation, navigation flight.

Requirement

Discuss:
- CRM in the NS TERF environment.
- NS TERF/formation techniques.
- NS HUD utilization.
- NS low altitude emergencies.

Introduce:
- NS TERF formation flight.
- NS HUD operation if available

Review: TERF-243 and NS-252.

Performance Standards. Pilots shall maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, ensure effective CRM for formation and obstacle clearance, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, employs NS combat cruise principles, plan and fly a route to a minimum of four checkpoints below 200 feet AGL, remain oriented on route within 500 meters, demonstrate effective cockpit management for precision navigation.

Prerequisite. TERF qualified, NS-252 and NS-255.

External Syllabus Support. Approved TERF route (special use airspace preferred).

NS-257 1.5 R 2 CH-46E A NS

Goal. Conduct NS TERF formation, navigation, and section CALs.

Requirement

Discuss:
- NS low-level emergencies.
- LZ brief/evaluation.

Review: NS-253, NS-256.

Performance Standards. Pilots shall navigate a route below 200 feet AGL with at least 4 checkpoints and remain oriented within 500 meters of course line, arrive at the final checkpoint within 2 minutes of the planned arrival time, maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during navigation, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within 2 rotors of intended point of landing.

Prerequisite. NS-253 and 256.

External Syllabus Support. NS compatible LZs and approved TERF route (special use airspace preferred).

7. Air-to-Ground (AG)

a. Purpose. To develop CRM proficiency during AG.

b. Minimum Crew Requirements. P/CP/CC/AGO.

c. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

d. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

AG-281 1.5 R 1+ CH-46E A

Goal. Introduce AG procedures.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Weapons preflight.
- Types of ammunition.
- Standard weapons commands.
- Lost communication procedures.
- Visual signals.
- Weapons safety considerations, malfunctions/emergencies.
- Weapons conditions.
- Sectors/Fields of fire.
- Shadow gunnery techniques.
- Towed target (banner) techniques.
- Moving target techniques.

Introduce: AG.

Performance Standards. Pilots shall use proper weapon procedures and commands to direct AG, demonstrate understanding of weapons parameters and employment, demonstrate proper response to weapon malfunctions, demonstrate proper understanding of aircraft maneuvers in response to threat, demonstrate understanding of briefed ROE, demonstrate understanding of weapons conditions, fly weapons delivery profile in accordance with briefed parameters, and demonstrate understanding of weapons control within briefed fields of fire and sectors of fire.

Ordnance. 500 rounds of .50 cal, 2 smoke grenades.

Range Requirements. Appropriate aerial gunnery range equipped with multiple scored targets ranging from personnel to APC size.

8. Carrier Qualification (CQ)

a. Purpose. To qualify the PUI in day and NS FCLPs.

b. General. Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for Shipboard Operations.

(1) An NSI is required for initial/refresher NS FCLP flights.

(2) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

1 Five day FCLPs.

2 Five NS FCLPs.

(b) Pilots previously night CQ and proficient per paragraph 132.8b(2)(a) above shall complete the following to maintain proficiency:

1 Two day FCLPs.

2 Two NS FCLPs.

(3) CQ-293 may be flown under any light level condition. PUI must be NSQ for appropriate light level.

(4) Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements

(1) CQ-291. P/CP/CC.

(2) CQ-293. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours / 1 Event, 2.0 Hours)

SCQ-290 2.0 1 WST S (N)

Goal. Introduce day, night unaided, and NS CQ.

Requirement

Discuss:
- CRM during shipboard landings.
- Communications used in shipboard environment.
- LSE signals.
- Emergency procedures over water (water landings/ ditching).
- Aircraft lighting used during shipboard operations.
- Aviation Capable/Air Capable class ships.
- Basic instrument scan.

Introduce: Day, night, and NS CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review: Instrument procedures.

Performance Standards. Pilots shall demonstrate proper shipboard and aircraft lighting procedures, maintain effective instrument/NS scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 1 meter of intended point of landing.

External Syllabus Support. FMC WST/APT/TEN.

CQ-291 1.0 1 CH-46E A

Goal. Conduct day FCLPs.

Requirement

Discuss:
- CRM during shipboard landings.
- Communications used during shipboard landings.
- LSE signals.
- Water landings/ditching.
- Aircraft lighting used during shipboard landings.
- Basic instrument scan.

Introduce: Day FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Performance Standards. Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval

parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 1 meter of intended point of landing.

Prerequisite. SCQ-290.

External Syllabus Support. Approved FCLP pad.

CQ-293 1.0 1 CH-46E A NS

Goal. Conduct NS FCLPs.

Requirement

Discuss:
CRM during NS shipboard landings.
Crew comfort levels during NS shipboard landings.
Situational awareness during NS shipboard landings.
Emergency procedures (aircraft and NS).
Aircraft and deck lighting during NS shipboard operations.
Basic instrument scan.

Introduce: NS FCLPs.

Review: CQ-291.

Performance Standards. Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument/NS scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 1 meter of intended point of landing.

Prerequisite. CQ-291.

External Syllabus Support. NS capable FCLP pad.

133. CORE SKILL ADVANCED PHASE

1. Carrier Qualification (CQ)

a. Purpose. To train/refresh the PUI in day and NS shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

1 Five day CQs.

2 Five NS CQs.

(b) Pilots previously night CQ and proficient per paragraph 133.1.b.(2)(a) above shall complete the following to maintain proficiency:

1 Two day CQs.

2 Two NS CQs.

(3) CQ-301 shall be flown under HLL conditions for initial qualification. NSI required for initial/refresher NS flights. Currency and requalification flights may be flown under any light level condition.

(4) Pilot is CQ upon completion of CQ-300, CQ-301.

(5) Pilots are authorized to carry passengers during daylight hours when proficient in CQ-300.

(6) Pilots are authorized to carry passengers at night with NS when proficient and current in CQ-301 and NSQ for the appropriate light level (IAW Program Manual MCO 3500.14 paragraph 402.3b).

(7) Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements

(1) CQ-300. P/CP/CC.

(2) CQ-301. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

(1) Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

(2) Review Ship’s Facilities Resume.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours)

CQ-300 1.0 1 CH-46E A

Goal. Conduct day CQ.

Requirement

Discuss:
CRM during shipboard landings.
Communications used during shipboard landings.
LSE signals.
Water landings/ditching.
Aircraft lighting used during shipboard landings.
Rotor engagement/disengagement.
Launch/recovery wind envelopes.

Basic instrument scan.

Introduce: Day CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review: CQ-291.

Performance Standards. Pilots shall fly 300 feet/80 kt pattern within 25 feet and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 1 meter of intended point of landing, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate understanding of shipboard communications and aircraft lighting.

Prerequisite. CQ-291 (if available).

External Support. Air capable ship deck.

CQ-301 1.0 R 1 CH-46E A NS

Goal. Conduct NS CQ.

Requirement

Discuss:
CRM during shipboard landings.
Communications used during shipboard landings.
LSE signals.
Water landings/ditching.
Aircraft lighting used during shipboard landings.
Rotor engagement/disengagement.
Launch/recovery wind envelopes.
Transition from instrument to NS scan.
Basic instrument scan.
NS scan/fixation.

Introduce: NS CQ patterns, approaches, landings, and emergency procedures peculiar to NS shipboard operations.

Review: CQ-293, CQ-300.

Performance Standards. Pilots shall fly 300 feet/80 kt pattern within 25 feet and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 1 meter of intended point of landing, maintain effective instrument and NS scan, recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft lighting.

Prerequisite. CQ-293 (if available) and CQ-300.

External Support. NS capable ship deck.

2. NS Low Light Level (LLL)

a. Purpose. Qualify the PUI in NS LLL operations.

b. General. Successful completion of NS-314 constitutes Night Systems Qualified (NSQ). A qualification letter signed by the commanding officer stating the pilot is NSQ is required to be qualified to carry troops under any ambient light level condition. The original shall be placed in the pilot's NATOPS jacket and a copy in his APR with a corresponding logbook entry.

c. Prerequisites

(a) NSQ HLL.

(b) Initial/Refresher flights require an NSI.

(c) Pilots shall fly all events in light levels less than .0022 lux.

d. Minimum Crew Requirements. P/CP/CC/AGO.

e. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

f. Flight and Simulator Event (4 Flights, 6.0 Hours/1 Simulator Event, 2.0 Hours)

SNS-310 2.0 WSTS NS

Goal. Conduct NS LLL TERF formation, navigation, single, section and division CALs.

Requirement

Discuss:
Crew comfort level during NS LLL operations.
NS LLL considerations.
NS LLL CAL techniques.
Aircraft lighting considerations during NS LLL operations.
Low altitude emergencies.

Introduce: NS LLL CALs.

Review: SNS-250, NS HUD operations.

Performance Standards. Pilots shall fly a navigation route with at least 4 checkpoints, fly route below 200 feet AGL, remain oriented on route within 500 meters, arrive at final checkpoint within 1 minute of planned arrival time, maintain effective instrument and NS scan, recognize proper closure with intended point of landing, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section

appropriately, wingman maintains situational awareness during navigation, TAC FORM maneuvers utilized properly to control flight, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing.

Prerequisite. SNS-250.

External Syllabus Support. NS capable WST/APT/TEN.

NS-311 1.5 R 1 CH-46E A NS

Goal. Introduce single aircraft NS LLL CALs.

Requirement

Discuss:
- Crew comfort level during NS LLL operations.
- NS LLL considerations.
- NS LLL CAL techniques.
- Aircraft lighting considerations during NS LLL operations.
- Low altitude emergencies.

Introduce: NS LLL CALs.

Review: NS-251, NS HUD operations if available.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NS scan.

Prerequisite. SNS-310.

External Syllabus Support. NS compatible CAL zone.

NS-312 1.5 R 2 CH-46E A NS

Goal. Introduce NS LLL formation and section CALs.

Requirement

Discuss:
- CRM during NS LLL formation.
- Crew comfort level during NS LLL formation operations.
- NS LLL formation techniques.
- External aircraft lighting considerations during NS LLL formation operations.

Introduce:
- NS LLL formation.
- NS LLL section CALs.

Review: NS-252 and NS-253.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NS scan, maintain proper distance and bearing within 3-5 rotors, utilize formation principles of radius of turn, step-up/step-down, recognize proper closure rate with lead aircraft.

Prerequisite. NS-311.

External Syllabus Support. NS CAL zone.

NS-313 1.5 R 3+ACFT A NS

Goal. Conduct NS LLL formation and division CALs.

Requirement

Discuss:
- CRM during NS LLL formation.
- Crew comfort level during NS LLL formation operations.
- NS LLL formation techniques.
- External aircraft lighting considerations during NS (LLL) formation operations.

Introduce:
- NS LLL division formation.
- NS LLL division CALs.

Review: NS-254 and NS-312.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NS scan, maintain proper distance and bearing for appropriate formation position, utilize formation principles of radius of turn, step-up/step-down, recognize proper closure rate with lead aircraft.

Prerequisite. NS-312.

External Syllabus Support. NS compatible CAL zone.

NS-314 1.5 R 2 CH-46E A NS

Goal. Conduct NS LLL TERF formation, navigation, and section CALs.

Requirement

Discuss:
- CRM during NS LLL TERF navigation.

Crew comfort level during NS TERF operations.
NS navigation considerations under LLL conditions.
Use of onboard navigation systems.
Emergencies at low altitude.

Introduce: NS LLL TERF navigation.

Review: NS-257, NS-312, and use of onboard navigation systems (GPS as secondary source).

Performance Standards. Pilots shall fly a navigation route with at least four checkpoints, fly route below 200 feet AGL, remain oriented on route within 500 meters, arrive at final checkpoint within 1 minute of planned arrival time, maintain effective instrument and NS scan, recognize proper closure with intended point of landing, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman maintains situational awareness during navigation, TAC FORM maneuvers utilized properly to control flight, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, and land within 2 rotors of intended point of landing.

Prerequisite. NS-313.

External Syllabus Support. NS CAL zone, approved TERF route.

3. Air-to-Ground (AG)

a. Purpose. To develop CRM proficiency during NS aerial gunnery.

b. General

(1) Employ onboard weapons systems to conduct air-to-ground gunnery utilizing NS.

(2) Entire crew must be present for the brief.

(3) CRM as applicable.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Prerequisites

(1) AG-281 and NS-251.

(2) NSI required if PUI is not NSQ for appropriate light level.

e. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

f. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

AG-321 1.5 R 1+ CH-46E A NS

Goal. Introduce NS AG gunnery.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Weapon preflight.
- Standard weapons commands.
- Lost communication procedures.
- Visual signals.
- Weapon malfunctions/stoppage.
- LASER employment and considerations/safety precautions.
- Sectors of fire/fields of fire.
- Shadow gunnery techniques.
- Moving target techniques.
- Weapon conditions.

Introduce:
- NS aerial gunnery.
- Effects of ordnance, expendables, pyrotechnics on NS.

Review: AG-281.

Performance Standards. Pilots shall maintain effective NS scan, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate understanding of NS considerations WRT weapons employment, use proper gun procedures and commands to direct aerial gunnery, demonstrate understanding of weapons parameters, demonstrate proper response to weapon malfunctions, demonstrate proper understanding of aircraft maneuvers in response to threat (demonstrates understanding of briefed ROE), demonstrate understanding of weapons conditions, fly weapons delivery profile IAW briefed parameters, demonstrate understanding of gun control within briefed fields of fire and sectors of fire.

Prerequisite. NS-251 and AG-281.

Ordnance. 500 rounds of .50 cal, expendables and others as available.

Range Requirements. Appropriate Laser authorized aerial gunnery range equipped with multiple scored targets ranging from personnel to APC size.

4. Ground Threat Reaction (GTR)

a. Purpose. To introduce and develop proficiency in using Aircraft Survivability Equipment (ASE), tactics, and on-board defensive weapon systems to evade ground-to-air threats.

b. General

(1) Conduct GTR-331 against simulated surface to air fires (smokey SAMS, MADSS, Malina/BARC, hand-held pyrotechnics, etc.) and 332 against threat emitters (e.g. SA-8, ZSU 23-4, etc.) and use ground based threat simulation.

(2) Refer to NTRP 3-22.4 Naval Aviation Technical Information Publication (NATIP) and the Air NTTP 3-22.3 for ASE operating procedures. Refer to Air NTTP 3-22.3 Appendix B for GTR training standards.

(3) .50 cal machine guns should be mounted for all GTR flights. M240 Ramp Fired Weapon (RFW) may be employed in accordance with NATOPS.

(4) Minimum altitude for GTR flights is 50 feet.

(5) Enlisted Aircrew instructors shall not have lookout duties during initial training events.

(6) All initial flights shall be conducted during the daytime and require a GTR-proficient WTI or DMI.

(7) All event participants shall attend the recommended academic training and flight brief. A walkthrough should be conducted.

(8) Prerequisites

(a) TERF qualified (STERF-240 for SGTR-330).

(b) FORM-231.

(c) When conducted at night, all aircrew shall be NSQ (for the appropriate light level).

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog and Air NTTP 3-22.3 Appendix B. Additional training should consist of:

(1) Current theater specific ROE training from a Staff Judge Advocate.

(2) Enemy situation to include threat systems and related tactics.

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours/1 Simulator Event, 2.0 Hours)

SGTR-330 2.0 WST S

Goal. Introduce ground threat reactions.

Requirement

Discuss:
CRM/inter-flight coordination.
Crew comfort level.

Lookout doctrine.
Situational awareness.
Use of ALE-39/47, APR-39, ALQ-157, AAR-47 and Go/No-Go procedures.
Use of RADAR horizons, RADAR masking, maneuver, and chaff to defeat threat RADAR systems.
Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.
Tactical expendables.
Various threat signatures with emphasis on threat recognition.
Tactical employment of .50 cal weapon system/RFW against ground threats.
Aerial gunnery, Point of Origin (POO), ROE, PID, and engagement criteria.
Intra aircraft communication.

Introduce:
Use of all onboard ASE.
Tactics against AAA, IR SAMs, and RADAR SAMs.

Performance Standards. Pilots shall demonstrate proper operation of ASE, understanding and interpretation of APR/AAR indications, ability to break lock when tracked, effective flight maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. SFORM-230.

External Syllabus Support. WST/APT, with operable TEN.

GTR-331 1.5 R 2 CH-46E A (NS)

Goal. Introduce ground threat reactions in a non-radar environment.

Requirement

Discuss:
CRM/inter-flight coordination.
Crew comfort level.
Lookout doctrine.
Situational awareness.
Use of ALE-39/47, APR-39, ALQ-157, AAR-47, and ASE Go/No-Go procedures.
Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.
Tactical expendables.
Various threat signatures with emphasis on threat recognition.
Tactical employment of .50 cal weapon system/RFW against ground threats.
Aerial gunnery, POO, ROE, PID, and engagement criteria.
Intra aircraft communication.

Introduce:
- GTR against non-radar threat systems emphasizing use of all onboard ASE and defensive weapon systems.
- Threat avoidance maneuvers and tactics to counter threat systems.
- Appropriate evasive maneuvers when engaged by a non-radar ground based threat.

Review: SGTR-330.

Performance Standards. All aircrew shall demonstrate proper operation of ASE, understanding and interpretation of AAR indications, effective maneuvering in response to threat, and proper ASE employment with regard to the threat.

Prerequisite. FORM-231, SGTR-330.

Ordnance. 60 flares, 2 x .50 cal weapon systems, 400 rnds .50 cal, (RFW), (500 rnds 7.62mm).

Range Requirements. Live fire range and threat simulation devices (smokey SAMS, MADSS, Malina/BARC, hand-held pyrotechnics, etc.) with sufficient range space to employ and maneuver at least a division of aircraft.

GTR-332 1.5 R 2 CH-46E A (NS)

Goal. Introduce ground threat reactions in a radar environment.

Requirement

Discuss:
- CRM/inter-flight coordination.
- Crew comfort level.
- Lookout doctrine.
- Situational awareness.
- Use of ALE-39/47, APR-39, ALQ-157, AAR-47, and ASE Go/No-Go procedures.
- Use of RADAR horizons, RADAR masking, maneuver, and chaff to defeat threat RADAR systems.
- Use of terrain masking, maneuver, and chaff to defeat threat radar missiles.
- Tactical expendables.
- Various threat signatures with emphasis on threat recognition.
- Tactical employment of .50 cal weapon systems/RFW against ground threats.
- Aerial gunnery, POO, ROE, PID, and engagement criteria.
- Intra/inter aircraft communication.
- Tactical formation maneuvering.

Introduce:
- GTR against RADAR threat systems emphasizing use of all onboard ASE and defensive weapon systems.
- Threat avoidance maneuvers and tactics to counter threat systems.

Appropriate evasive maneuvers when engaged by a ground based threat in a radar environment.

Review: FORM-231 and SGTR-330.

Performance Standards. All aircrew shall demonstrate proper operation of ASE, understanding and interpretation of APR indications, ability to break lock when tracked, effective maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. FORM-231 and SGTR-330.

Ordnance. 40 chaff, 20 flares, 2 x .50 cal weapon systems, (RFW).

Range Requirements. EW range with functional EW emitter and threat simulation devices (e.g. SA-8, ZSU 23-4, smoke grenades or pyrotechnics, etc.) with sufficient range space to employ and maneuver at least a division of aircraft.

5. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in MAT.

b. General

(1) Conduct training in mountainous terrain that emphasizes the unique challenges in a high altitude environment. This would include weather, wind, altitude, and slope/pinnacle landings.

(2) CRM as applicable to MAT operations.

c. Minimum Crew Requirements. P/CP/CC.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SMAT-350 2.0 WST S

Goal. Conduct MAT.

Requirement

Discuss:
CRM in MAT.
Emergencies in mountainous terrain.
Wind and weather effects.
High altitude operations.
Slope landings.
Pinnacle landings.

Introduce:
Mountainous area operations.

Pinnacle landings.
Slope landings.
Landings and operations in valleys and canyons.
Crosswind landings.
Max gross operations.
Waveoff.

Review: SCAL-210.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, and demonstrate effective CRM.

Prerequisite. SCAL-210.

External Syllabus Support. Area that supports MAT.

MAT-351 1.5 R 1 CH-46E A

Goal. Conduct MAT.

Requirement

Discuss:
CRM in MAT.
Emergencies in mountainous terrain.
Wind and weather effects.
High altitude operations.
Slope landings.
Pinnacle landings.

Introduce:
Mountainous area operations.
Pinnacle landings.
Slope landings.
Landings and operations in valleys and canyons.
Crosswind landings.

Review: CAL-211 and SMAT-350.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, and demonstrate effective CRM.

Prerequisite. CAL-211.

External Syllabus Support. Area that supports MAT.

6. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, aerial observer, HRST master, and HRST safety observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) ICS cranials and gunner's belts are required for HRST.

(3) CRM as applicable to HIE operations.

(4) Prerequisite. Aircrew must be NSQ (appropriate light level) for flights conducted on NS.

(5) External Syllabus Support. HRST master and safety observer.

c. Minimum Crew Requirements

(1) HIE-361. P/CP/CC.

(2) HIE-362. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours/1 Simulator Event, 2.0 Hours)

SHIE-360 2.0 WST/S

Goal. Introduce fastrope, SPIE rig, paraops, helocast, and rescue hoist ops.

Requirement

Discuss:
- HIGE/HOGE requirements.
- Voice communication/standard terminology.
- Current Force Order/Wing SOP.
- Emergency procedures.
- Tactical considerations for various HIE techniques.
- Fastrope, SPIE rig, paraops, helocast, and rescue hoist ops procedures.

Introduce:
- Skills involved for holding an extended high hover.
- Troop insertion and extraction via fastrope, SPIE rig, paraops, helocast, and rescue hoist ops.

Review: SEXT-220.

Performance Standards. Pilots shall execute HIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints,

recognize proper closure to insertion point, remain oriented on insertion point, utilize solid instrument scan, demonstrate proper CRM/ voice commands, maintain SA of obstacle clearance,

demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

External Syllabus Support. WST/APT.

HIE-361 1.0 R 1 CH-46E A

Goal. Conduct fastrope and rappel procedures.

Requirement

Discuss:
- HIGE/HOGE requirements.
- CRM. Pilots, crew chief, HRST master and HRST safety observer brief together.
- Voice communication/standard terminology.
- ICS failure/hand and arm signals.
- Current Force Order/Wing SOP.
- Obstacle clearance/waveoff.
- Rope specific emergency procedures.
- Tactical considerations for fastrope/rappel operations.

Introduce:
- Preflight of fastrope frame/rappel rigging.
- Skills involved for holding an extended high hover.
- Troop insertion via fastrope/rappelling.

Review: SHIE-360.

Performance Standards. Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute HIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, utilize solid instrument scan, demonstrate proper crew resource management/voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. CAL-211, EXT-221, SHIE-360.

External Syllabus Support. Applicable HIE support equipment.

HIE-362 1.0 1 CH-46E A NS

Goal. Introduce and develop proficiency in NS fastrope/rappel.

Requirement

Discuss:
- CRM.

NS considerations during NS HIE operations.
Emergency procedures during NS HIE operations.

Introduce: NS fastrope/rappel procedures.
Review: HIE-361.

Performance Standards. Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute HIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, maintain effective NS scan, utilize solid instrument scan, demonstrate proper CRM/voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. HIE-361.

External Syllabus Support. Applicable HIE support equipment.

7. Tactics (Low and Medium Threat) (TAC)

a. Purpose. To introduce and develop proficiency in tactical planning, briefing and execution of assault support operations in the following mission areas in a low and medium threat environment. Use MCCRES Volume III, Section A standards.

(1) Helicopter Assault Operations (MPS 3A.4).

(2) Noncombatant Evacuation Operations (NEO) (MPS 3A.7).

(3) Raid (MPS 3A.8).

(4) Security/Reinforcement (MPS 3A.9).

(5) Reconnaissance Patrol/Reaction Force Operations (MPS 3A.10).

(6) Medical Evacuation (MPS 3A.1).

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) (MPS 3A.12).

b. General

(1) Utilizing a low to medium threat scenario, the PUI should assist in planning and briefing the mission. The AMC/flight leader should delegate planning and briefing responsibilities to PUIs.

(2) Squadron ordnance shall mount .50 caliber machine guns for all tactical flights.

(3) Pilots shall discuss CRM as applicable to each event.

(4) A WTI/flight leader should instruct initial STAC-373 event for PUI.

c. Minimum Crew Requirement. P/CP/CC/AGO for all aircraft events.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (4 Flights, 6.0 Hours/2 Simulator Events, 4.0 Hours)

STAC-370 2.0 WST S (NS)

Goal. Conduct day or NS assault support operation in a low threat environment per MCCRES Volume III, Section A.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement as they apply to the mission.
- Tactics used in a low threat environment.
- Use of onboard navigation systems.
- NS considerations with multiple aircraft aerial gunnery.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- PUI will assist in planning and conducting the tactical brief.
- Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the Air NTTP 3-22.1 and Air NTTP 3-22.3 Tactical Employment Guides.
- Radio procedures and discipline consistent with EMCON conditions.
- DASC control.
- Approach and retirement routes.
- Air control points.
- Escort tactics.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

External Syllabus Support. WST/APT, operable TEN and ASE.

TAC-371 1.5 2+ ACFT A

Goal. Conduct an assault support operation in a low threat environment IAW MCCRES Volume III, Section A MPS 3A.4.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement as they apply to the mission.
- Tactics used in a low threat environment.
- Use of onboard navigation systems.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- PUI will assist in planning and conducting the tactical brief.
- Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the Air NTTP 3-22.1 and Air NTTP 3-22.3 Tactical Employment Guides.
- Radio procedures and discipline consistent with EMCON conditions.
- DASC control.
- Approach and retirement routes.
- Air control points.
- Escort tactics.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. CAL-212, STAC-370 and TERFQ.

Ordnance. Optional.

Range Requirements. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). Appropriate

aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

TAC-372 1.5 2+ ACFT A NS

Goal. Conduct an NS assault support operation in a low threat environment IAW MCCRES Volume III, Section A, MPS 3A.4.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement as they apply to the mission.
- Tactics used in a low threat environment.
- Use of precision navigation systems.
- Ordnance effects on NS.
- Laser aiming devices.

Introduce:
- Tactical planning, briefing, execution, and use of onboard navigation systems.
- PUI will assist in planning and conducting the tactical brief.
- Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the Air NTTP 3-22.1, Air NTTP 3-22.3, and Air NTTP 3-22.5.
- Radio procedures and discipline consistent with EMCON conditions.
- DASC control.
- Approach and retirement routes.
- Air control points.
- Escort tactics.

Review: GTR-331.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, demonstrate proper understanding of Laser employment, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of

FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. TAC-371, NSQ for appropriate light level.

Ordnance. Optional.

Range Requirements. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). Appropriate laser authorized aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

STAC-373 2.0 WST S (NS)

Goal. Conduct a day or NS assault support operation in a medium threat environment emphasizing MCCRES standards.

Requirement

Discuss:
- CRM during an assault support mission.
- Flight countertactics for air and ground threats.
- ASE utilization.
- Escort considerations.
- Fire support considerations and control measures.
- Control and terminology for onboard defensive weapons.
- EMCON procedures.
- NBC considerations.
- TERF considerations.

Introduce:
- Mission planning using a preplanned scenario and mission.
- Tactical formations and maneuvers.
- Navigation time and distance checks to meet a planned L-Hour.
- Multi-plane aerial gunnery in an objective area/LZ, if possible.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisite. STAC-370.

External Syllabus Support. WST/APT/operable TEN and ASE.

TAC-374 1.5 2+ ACFT A

Goal. Conduct a day assault support mission in a medium threat environment emphasizing MCCRES standards.

Requirement

Discuss:
- CRM during an assault support mission.
- Flight countertactics for air and ground threats.
- ASE utilization.
- Escort considerations.
- Fire support considerations and control measures.
- Control and terminology for onboard defensive weapons.
- EMCON procedures.
- NBC considerations.
- TERF considerations.

Introduce:
- Mission planning using a preplanned scenario and mission.
- Tactical formations and maneuvers.
- Navigation time and distance checks to meet a planned L-Hour.
- Multi-plane aerial gunnery in an objective area/LZ, if possible.
- Escort aircraft utilization, if available.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. STAC-373.

Ordnance. 20 chaff, 40 flares, .50 cal optional.

Range Requirements. TERF area, CAL site, (special use airspace with live fire and ground emitter capable range preferred). Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

TAC-375 1.5 R 2+ ACFT A NS

Goal. Conduct an assault support mission in a medium threat environment on NS IAW MCCRES Volume III, Section A, MPS 3A.16 Night Operations.

Requirement

Discuss:
- CRM conducting a NS mission.
- Escort considerations at night.
- Fire support considerations at night.
- NS mission briefing.
- NS considerations during tactical missions.
- Precision navigation systems.
- ASE utilization for night missions.
- NBC considerations.
- TERF considerations.

Introduce:
- Tactical assault support mission at night using NS.
- Escort aircraft utilization, if available.
- Multi-aircraft NS aerial gunnery in an objective area if possible.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, proper use of tactical formations, demonstrate SA of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, proper understanding of laser employment, proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, proper understanding of escort considerations, proper understanding of secure and active communications, understanding of FSCM utilization, and understanding of contingency considerations.

Prerequisites. TAC-374.

Ordnance. 20 chaff, 40 flares, .50 cal optional.

Range Requirements. TERF area, CAL site, (special use airspace with live fire and ground emitter capable range preferred). Appropriate laser authorized aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

8. External Cargo Operations (EXT)

a. Purpose. To conduct NS external cargo operations.

b. General

(1) CRM applicable to external cargo operations.

(2) NSI required for initial/Refresher SEXT-390, EXT-392. Aircrew shall be NSQ for the appropriate light level.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SEXT-390 2.0 WST S (NS)

Goal. To conduct external operations in the TERF and/or NS environment.

Requirement

Discuss:
Emergency procedures during TERF external operations.
Limitations on power available, speed, maneuverability and altitude during TERF external operations.
LZ lighting for NS external operations.
Common terminology for NS external operations.
Aircraft and NS emergencies.

Introduce:
Fly a TERF route with a minimum of 4 checkpoints in the contour profile while carrying an external load.
External load operations to a confined area while using NS in an environment. Complete a minimum of 5 hookup/drops.

Review: SEXT-220, STERF-240 and SNS-250 if applicable.

Performance Standards. Pilot shallproperly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective NS scan, utilize solid instrument scan, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/HOGE requirements.

Prerequisites. SEXT-220, STERF-240 and SNS-250 if applicable.

External Syllabus Support. External capable WST/APT.

EXT-392 1.5 R 1 CH-46E A NS

Goal. Conduct NS external cargo operations to a confined area.

Requirement

Discuss: CRM during external operations.

Introduce: External load operations to a confined area in an NS environment. Complete a minimum of 5 hookup/drops.

Review: SEXT-390, EXT-221, and NS-251.

Performance Standards. Pilots shall properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/ descent rates, maintain briefed clearance below load, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective instrument and NS scan, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/HOGE requirements.

Prerequisites. EXT-221.

External Syllabus Support. Single-point load (1000-4000 Pounds preferred), HST, confined area landing zone.

134. CORE SKILL PLUS PHASE

1. Tactics (High Threat Environment) (TAC)

a. Purpose. To develop proficiency in tactical planning, briefing and execution of assault support operations in the following mission areas in a high threat environment. Use MCCRES Volume III, Section A, Standards.

(1) Helicopter Assault Operation [MPS 3A.4].

(2) Noncombatant Evacuation Operation (NEO) [MPS 3A.7].

(3) Raid [MPS 3A.8].

(4) Security/Reinforcement [MPS 3A.9].

(5) Reconnaissance Patrol/Reaction Force Operation [3A.10].

(6) Medical Evacuation [MPS 3A.1].

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) [MPS 3A.12].

b. General

(1) Utilizing a high threat scenario, the PUI should assist in planning and briefing the mission. The AMC/flight leader should delegate planning and briefing responsibilities to PUIs.

(2) Squadron ordnance shall mount .50 caliber machine guns for all tactical flights.

c. Minimum Crew Requirement

(1) STAC-400. A flight leader should instruct PUI.

(2) TAC-401/402. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours/1 Simulator Event, 2.0 Hours)

STAC-400 2.0 WST S (NS)

Goal. Conduct a day or NS assault support mission in a high threat environment using MCCRES standards; incorporate AG and GTR concepts and skills.

Requirement

Discuss:
- CRM/crew comfort level.
- ASE operations and secure voice capability.
- NBC considerations.
- Planning based on METT.
- Aerial gunnery procedures.
- Helicopter Operation Planning Checklist and Mission Briefing Guide as contained in the Air NTTP 3-22.3.
- NS considerations if flown at night.
- TERF considerations.

PUI will plan and execute an assault support mission from a mission statement using MCCRES standards in a high threat environment. The PUI will fly the mission at TERF altitudes. Use escort aircraft (fixed-wing and/or helicopter) if available. Use aggressor aircraft if available. Incorporate the firing of .50 cal machine guns.

Introduce:
- ASE and secure voice.
- Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Review: STAC-373.

Performance Standards. Pilots shall perform per Air NTTP 3-22.1/Air NTTP 3-22.3/Air NTTP 3-22.5 as appropriate. Reference appropriate mission task within HMM and MEU(SOC) MPS (these standards are located on USMC doctrinal web page), remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate proper understanding of C4I utilization to

facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, proper understanding of secure and active communications, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. STAC-373.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

TAC-401 1.5 2+ ACFT A

Goal. Conduct a day assault support mission in a high threat environment using MCCRES standards; incorporate AG and GTR concepts and skills.

Requirement

Discuss:
- CRM/crew comfort level.
- ASE operations and secure voice capability.
- NBC considerations.
- Planning based on METT.
- Aerial gunnery procedures.
- Helicopter Operation Planning Checklist, and Mission Briefing Guide as contained in the Air NTTP 3-22.3.
- TERF considerations.

PUI will assist in planning and execute an assault support mission from a mission statement using MCCRES standards in a high threat environment. The PUI will fly the mission at TERF altitudes. Use escort aircraft (fixed-wing and/or helicopter) if available. Use aggressor aircraft if available. Incorporate the firing of .50 caliber machine guns.

Introduce:
- ASE and secure voice.
- Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Review: TAC-374.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations and SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver WRT threat response in concert with proper aerial

gunnery employment, demonstrate proper understanding of event-driven versus time-driven mission execution, proper understanding of C4I utilization to facilitate execution and information flow, demonstrate proper understanding of escort considerations, proper understanding of secure and active communications, laser employment, proper understanding of contingency requirements, understanding of FSCM utilization and contingency considerations.

Prerequisites. GTR-332, TAC-374, and STAC-400.

Ordnance. 20 chaff and 40 flares, 500 rounds .50 cal.

Range Requirements. TERF area, CAL site, (special use airspace with live fire and ground emitter capable range preferred). Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. (As available), FW/RW escort/CAS assets, FW/RW adversaries.

TAC-402 1.5 R 2+ ACFT A NS

Goal. Conduct an assault support mission in a high threat environment on NS per MCCRES Volume III, Section A, MPS 3A.16 Night Operations.

Requirement

In addition to the TAC-401 discussion items, discuss NS operational considerations.

Execute a NS mission similar to TAC-401. The PUI will fly the mission at TERF altitudes.

Emphasize navigation, timing, formation, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of event-driven versus time-driven mission execution, proper understanding of C4I utilization to facilitate execution and information flow, proper understanding of escort considerations, proper understanding of secure and active communications, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, proper understanding of laser employment and contingency

requirements, demonstrate understanding of FSCM utilization, and understanding of contingency considerations.

Prerequisites. TAC-375 and TAC-401, NSQ for appropriate light level.

Ordnance. 20 chaff and 40 flares, 500 rounds .50 cal.

Range Requirements. TERF area, CAL site, (special use airspace with live fire and ground emitter capable range preferred). Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. (As available) FW/RW escort/CAS assets, FW/RW adversaries, C4I integration.

2. Confined Area Landings (CAL)

a. Purpose. To develop proficiency in takeoffs and landings in a confined area.

b. General. Pilots will find maneuver descriptions in the NATOPS Flight Manual. Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

CAL-413 1.5 R 1 CH-46E A N*

Goal. Introduce night unaided CALs.

Requirement

Discuss/Introduce:
- CRM.
- Crew comfort levels.
- Night fixation.
- Night CAL takeoffs, approaches, and landings to various unlighted CAL zones.
- Use of landing and searchlights.
- LZ brief/evaluation.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate power management, maintain safe obstacle clearance, and land within two rotors of intended point of landing.

Prerequisite. FAM-201, CAL-211.

External Syllabus Support. CAL zones.

3. External Cargo Operations (EXT)

a. Purpose. To conduct TERF external cargo operations.

b. General

(1) CRM applicable to external cargo operations.

(2) TERFI required for initial EXT-420.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

EXT-420	1.5	R 1 CH-46E A

Goal. Conduct TERF external cargo operations to a confined area.

Requirement

Discuss: CRM during TERF external evolutions.

Introduce: External load operations to a confined area in a TERF environment. Complete a minimum of 5 hookup/drops.

Review: SEXT-390.

Performance Standards. Pilots shall properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/ descent rates, fly route within 50 feet and 10 kts of briefed altitude and airspeed, utilize proper CRM, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/ HOGE requirements, remain oriented on route within 200 meters, ensure effective CRM for navigation and obstacle clearance, demonstrate aircraft control in all phases of TERF regime, demonstrate effective cockpit management for precision navigation, utilize proper terminology and voice commands.

Prerequisite. EXT-221 and TERF-242.

External Syllabus Support. Load (1,000-4,000 pounds preferred), HST, authorized TERF route.

3. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To develop proficiency with the NAVAIR approved NBC mask protective assembly during normal and tactical flight operations to include while wearing NS.

b. General

(1) When the event is conducted in the simulator both pilots should be masked. For the safe execution of initial NBC flights, 1 pilot and 1 aircrewman shall remain unmasked when conducted in the aircraft. On subsequent flights all aircrew may remain masked. When using the NAVAIR approved NBC mask during NS training flights, 1 pilot and 1 aircrewman shall remain unmasked due to the restricted field of view when using NS with the NAVAIR approved NBC mask.

(2) Initial NBC-432 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

(3) NSI required for all initial NS instructional flights.

(4) Aircrew shall be NSQ for the appropriate light level for proficiency flights.

c. Minimum Crew Requirements. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours/1 Simulator, 2.0 Hours)

SNBC-430 2.0 WST S (NS)

Goal. Develop flight skills in a simulated NBC environment. Conduct NS flight operations in a simulated NBC environment.

Requirement

Discuss:
- Aircrew protective ensemble.
- Nuclear effects to aircraft and aircrew.
- Chemical and Biological agents, their effects and aircrew protective measures.
- Decontamination considerations.
- CRM in an NBC environment, to include emergency procedures.
- Operational capabilities and limitations of protective masks.
- Physiological limitations and fatigue factors imposed by NBC protective equipment.
- Heliborne operations in a NBC environment.
- NS operations in a NBC environment.
- NS failures.
- Operational capabilities, limitations and compatibility of the NAVAIR approved NBC mask and NS.
- Emergency egress and ditching considerations.

Demonstrate:
- Donning, adjustments, and doffing of the NAVAIR approved NBC mask.
- Donning, adjustments and doffing of the NAVAIR approved NBC mask with NS (as applicable).

Introduce:
Ground operations.
Airfield pattern operations.
CALs.

Performance Standards. Pilots shall demonstrate ability to perform all ground operations with NAVAIR approved NBC mask, demonstrate ability to safely perform flight maneuvers with NAVAIR approved NBC mask, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, land within 2 rotors of intended point of landing, maintain effective NS scan, and utilize solid instrument scan.

Prerequisite. SCAL-210.

External Syllabus Support. WST/APT.

NBC-431 1.0 R 1 CH-46E A

Goal. Conduct normal flight operations in a simulated NBC environment.

Requirement

Discuss:
Aircrew protective ensemble.
Nuclear effects to aircraft and aircrew.
Chemical and Biological agents, their effects and aircrew protective measures.
Decontamination considerations.
CRM in an NBC environment to include emergency procedures.
Operation capabilities and limitations of protective masks.
Physiological limitations and fatigue factors imposed by NBC protective equipment.
Heliborne operations in a NBC environment.

Demonstrate: Donning, adjustments and doffing of the NAVAIR approved NBC mask.

Introduce: (with NAVAIR approved NBC mask donned)
Ground operations.
Airfield pattern operations.
CALs.

Performance Standards. Pilots shall demonstrate ability to perform all ground operations with NAVAIR approved NBC mask, ability to safely perform flight maneuvers with NAVAIR approved NBC mask, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, and land within 2 rotors of intended point of landing.

Prerequisites. CAL-211 and SNBC-430.

External Syllabus Support. CAL zone.

NBC-432 1.0 1 CH-46E A NS

Goal. Conduct NS flight operations in a simulated NBC environment.

Requirement

Discuss:
Heliborne operations at night in a NBC environment.
NS failures.
Operational capabilities, limitations and compatibility of the NAVAIR approved NBC mask and NS.
CRM in a NBC environment to include emergency procedures.
Demonstrate: Donning, adjustments, and doffing of the NAVAIR approved NBC mask with NS.

Introduce: (with NAVAIR approved NBC mask and NS donned)
Ground operations.
Airfield pattern operations.
CALs.

Performance Standards. Pilot shall maintain effective NS scan, utilize solid instrument scan, demonstrate ability to safely perform flight maneuvers with NAVAIR approved NBC mask, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, and land within 2 rotors of intended point of landing.

Prerequisites. NBC-431, and NSQ HLL.

External Syllabus Support. NS compatible CAL zone.

4. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to evade enemy air-to-air threats.

b. General

(1) After successful completion of DM-441/442 PUI is DM qualified. A qualification letter signed by the commanding officer stating the pilot is DMQ is required to be placed in the aircrew APR and NATOPS jacket with appropriate logbook entry.

(2) Aircrew shall not conduct DM training unless the following requirements are met:

(a) A proficient DMI is present in the cockpit for all initial and refresher flights.

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the MAWTS-1 Helicopter DM Guide.

(c) The flight lead briefs any aggressor aircrew per T&R Program Manual, and covers training rules prior to each flight.

(3) For helicopter versus helicopter DM, the aggressor aircraft shall be a non-assault helicopter.

(4) .50 cal machine guns shall be mounted for all DM flights.

(5) Prerequisites

(a) TERF qualified. (STERF-240 FOR SDM-440)

(b) FORM-231.

c. Minimum Crew Requirement. P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 3.0 hours/1 Simulator Event, 2.0 Hours)

SDM-440 2.0 WST S

Goal. Introduce section DM against a RW/FW aggressor.

Requirement

Discuss:
CRM/inter-flight coordination.
Crew comfort level.
Lookout doctrine.
Common terminology.
SA.
DM training rules.
Closure rate, radius of turn, and energy state.
Use of ALE-39/47, APR-39, ALQ-157, and AAR-47.
Use of .50 caliber machine gun.
DM against RW/FW aggressor.
Inter/intra aircraft communication.

Introduce: DM with a RW/FW aggressor per the MAWTS-1 Helicopter DM Guide.

Review: Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Pilots shall meet learning objectives as established by MAWTS-1 DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper

terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

DM-441 1.5 R 2 CH-46E A VS 1 RW AGGRESSOR

Goal. Introduce DM against a RW aggressor.

Requirement

Discuss:
- CRM/Inter-flight coordination.
- Crew comfort level.
- Lookout doctrine.
- Common terminology.
- SA.
- DM training rules.
- Closure rate, radius of turn, and energy state.
- RW weapons parameters and considerations.
- Use of ALE-39/47, APR-39, ALQ-157, and AAR-47.
- Use of onboard weapon systems.
- DM against RW aggressor.
- Inter/intra aircraft communication.

Introduce: Helicopter versus helicopter DM with an aggressor helicopter per the MAWTS-1 Helicopter DM Guide.

Review: Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Pilots shall meet learning objectives as established by MAWTS-1 DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, utilize effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Ordnance. 20 chaff and 40 flares.

Range Requirements. Training area that supports use of expendables (if available).

External Syllabus Support. Special use airspace preffered, RW adversary (RW platform capable of fwd firing ordnance).

DM-442 1.5 R 2 CH-46E A VS 1 FW AGGRESSOR

Goal. Introduce DM against a FW aggressor.

Requirement

Discuss:
CRM/inter flight coordination.
Crew comfort level.
Lookout doctrine.
Common terminology.
SA.
Closure rate, radius of turn, and energy state.
FW weapons parameters and considerations.
Use of ALE-39/47, APR-39, ALQ-157, AAR-47.
DM training rules.
Use of .50 caliber machine gun.
DM against FW aggressor.
Inter/intra cockpit communication.

Introduce: Helicopter versus FW DM per the MAWTS-1 Helicopter DM Guide.

Performance Standards. Pilots shall meet learning objectives as established by MAWTS-1 DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Ordnance. 20 chaff and 40 flares.

Range Requirements. Training area that supports use of expendables (if available).

External Syllabus Support. Special use airspace preferred, FW adversary.

5. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. Minimum Crew Requirement

(1) MAT-450. P/CP/CC.

(2) MAT-451. P/CP/CC/AGO.

c. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

d. Flight and Simulator Event Training (2 Flights, 3.0 Hours)

MAT-450 1.5 R 2 CH-46E A

Goal. Introduce section aircraft operations in mountainous terrain.

Requirement

Discuss:
Section maneuvering during mountain area operations.
CAL selection in mountain areas.
CAL techniques in mountain areas.

Introduce:
Section operations in mountainous terrain.
Section CALs in mountainous terrain.

Review: CAL-212 and MAT-351.

Performance Standards. Pilots shall maintain SA of wingman requirements, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase and effective CRM.

Prerequisite. CAL-212 and MAT-351.

External Syllabus Support. Operating area that supports MAT.

MAT-451 1.5 R 1 CH-46E A NS

Goal. Introduce NS mountainous area operations.

Requirement

Discuss:
CRM during mountainous terrain NS operations.
Visual illusions on NS in mountainous terrain.

Introduce:
NS mountainous terrain operations.
NS CALs in mountainous areas.

Review: NS-251.

Performance Standards. Pilots shall maintain effective NS scan, utilize solid instrument scan, recognize proper closure with intended point of landing, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, land within 1/2

rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, proper use of cyclic trim in landing phase and effective CRM.

Prerequisites. MAT-351 and NSQ for the appropriate light level.

External Syllabus Support. Operating area that supports MAT.

6. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, aerial gunner/observer, HRST Master, and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of aerial delivery (paradrops and cargo drops). Pilots shall preflight aircraft rigging.

(3) ICS cranials and gunner's belts are required for Jump Master/Cast Master.

(4) All initial/refresher events should be conducted as a day evolution.

(5) Prerequisite. Aircrew must be NSQ (appropriate light level) for flights conducted on NS.

(6) External Syllabus Support. HRST/Cast Master and Safety Observer.

c. Minimum Crew Requirements

(1) HIE-460 through 463(day). P/CP/CC.

(2) HIE-460 through 463(NS). P/CP/CC/AGO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (4 Flights, 4.0 Hours)

HIE-460 1.0 R 1 CH-46E A (NS)

Goal. Introduce SPIE rig operations.

Requirement

Discuss:
HIGE/HOGE requirements.
CRM. Pilots, crew chief, HRST Master and HRST Safety Observer brief together.
Voice communication/standard terminology.

ICS failures/hand and arm signals.
Current Force Order/Wing SOP.
Obstacle clearance.
Emergency procedures.
Tactical considerations for SPIE operations.
SPIE extraction from water.

Introduce:
Inspection of SPIE Rig.
Skills involved for holding extended hover.
Troop insertion/extraction via SPIE Rig.

Performance Standards. Pilots shall demonstrate ability to properly inspect aircraft rigging, ability to insert ropers within 10 feet of intended point of insertion, execute HIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, demonstrate understanding of emergency procedures requirements, utilize solid instrument scan, demonstrate proper CRM and voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover and understanding of HOGE requirements.

Prerequisite. EXT-221 (NS-392 for events conducted on NS).

External Syllabus Support. HRST and Safety Observers.

HIE-461 1.0 R 1 CH-46E A (NS)

Goal. Introduce day or NS aerial delivery procedures.

Requirement

Discuss:
CRM during aerial deliveries.
Voice communication/standard terminology during aerial deliveries.
Tactical considerations for aerial delivery of troops/cargo.
Proper rigging and preflight of equipment to be inserted by aerial delivery.
Paradrop procedures.
Sensor drop procedures.
ICS procedures.
Airspace coordination considerations.

Introduce: Insertion of troops/cargo or sensors by aerial delivery.

Performance Standards. Pilots shall demonstrate ability to properly inspect aircraft rigging, execute HIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, maintain effective instrument and NS scan, demonstrate proper CRM and voice commands, maintain SA of obstacles.

Prerequisite. NSQ for the appropriate light level for events conducted on NS.

External Syllabus Support. Certified DZ, Jumpmaster and Safety Observers.

HIE-462 1.0 R 1 CH-46E A (NS)

Goal. Introduce helocast/soft duck procedures.

Requirement

Discuss:
- CRM while performing helocast or soft duck over water.
- Proper rigging and preflight of equipment to be inserted via helocast and soft duck.
- Low altitude aircraft emergencies over water.
- Ditching/water landing.
- Salt encrustation/compressor stall.
- Helocast/soft duck delivery altitudes and airspeeds.
- Voice communications/standard terminology.
- Tactical considerations for helocast/soft duck operations.

Introduce:
- Insertion of troops and equipment by helocast or soft duck.
- Preflight of aircraft, troops and equipment for helocast or soft duck.

Performance Standards. Pilots shall demonstrate ability to properly inspect rigging, execute HIE per local SOPs, fly pattern within 5 feet and 5 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, demonstrate proper CRM and voice commands, maintain SA of water and other obstacles.

Prerequisite. NSQ for the appropriate light level for events conducted on NS.

External Syllabus Support. Cast Master and Safety Observers.

HIE-463 1.0 R 1 CH-46E A (NS)

Goal. Introduce hoist and rescue procedures for overland/over water operations.

Requirement

Discuss:
- CRM during rescue operations.
- Considerations during rescue operations.
- Emergency procedures during rescue operations.

Review:
- Preflight of appropriate HIE equipment.
- Internal/external hoisting operations.

Performance Standards. Pilots shall properly respond to crew positioning calls, exercise hoist operations within 2 meters of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover and understanding of load computation and HIGE/HOGE requirements.

Prerequisite. EXT-221 (NSQ for the appropriate light level for events conducted on NS).

External Syllabus Support. Operational jungle penetrator or SAR basket (as available).

7. Carrier Qualification (CQ)

a. Purpose. To train/refresh the PUI in night unaided shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) CQ Requirements

(a) Requirements for initial/refresher/delinquent night unaided CQ events are:

1 Five day CQs.

2 Five night unaided CQs.

(b) Pilots CQ-491 proficient per paragraph 2(a) shall complete the following to maintain proficiency:

1 Two day CQs.

2 Two night unaided CQs.

(3) Pilots are authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491, NSQ for the appropriate light level, and IAW MCO P3500.14.

(4) Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements. P/CP/CC.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

(1) Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

(2) Review Ship’s Facilities Resume.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours)

CQ-490 1.0 1 CH-46E A N*

Goal. Conduct night unaided FCLPs.

Requirement

Discuss:
CRM during night shipboard landings.
Crew comfort levels during night shipboard landings.
Situational awareness during night shipboard landings.
Aircraft lighting used during night shipboard landings.
Basic instrument scan.
Emergency procedures at night over water.

Introduce: Night FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review: CQ-291.

Performance Standards. Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 1 meter of intended point of landing.

Prerequisite. CQ-291.

External Syllabus Support. Approved FCLP pad.

CQ-491 1.0 R 1 CH-46E A N*

Goal. Conduct night unaided CQ.

Requirement

Discuss:
CRM during shipboard landings.
Communications used during shipboard landings.
LSE signals.
Water landings/ditching.
Aircraft lighting used during shipboard landings.
Rotor engagement/disengagement.
Launch/Recovery wind envelopes.
Instrument scan.

Performance Standards. Pilots shall fly 300 feet/80 kt pattern within 25 feet and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from

aircrew, remain oriented on assigned landing spot, land within 1 meter of intended point of landing, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft lighting.

Prerequisite. CQ-300 and CQ-490 (if available).

External Syllabus Support. CQ capable ship.

140. INSTRUCTOR TRAINING

1. Instructor Under Training (IUT)

a. Purpose. The CH-46E Fleet Replacement Squadron (FRS) shall develop qualified instructor pilots, classroom materials, and procedures for instructor training and maintain the Instructor Under Training (IUT) syllabus for the CH-46E T&R.

b. General

(1) The IUT should fly all sorties with an experienced IP. The IP for NS-513 shall be an NSI.

(2) The IUT may fly a CAL-507 and receive a FRS TERFQ. This qualification will allow an IUT to receive the IP designation and can only instruct a Pilot Under Instruction (PUI) during a TERF-171.

(3) The IUT may fly a NS-513 and receive a FRS NSQ. This qualification will allow an IUT to receive the IP designation and be qualified to train in the Night Systems Familiarization Instructor (NSFI) Certification Course. The IP can only instruct a PUI during a NS-181, NS-182, and NS-183.

(4) The IUT may find all maneuver descriptions in the FRS Standardization Manual, NATOPS Flight Manual, and MAWTS-1 Course Catalog.

(5) Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements. IP/IUT/CC (AGO if NS are used).

d. Ground/Academic Training

(1) All IUTs shall complete all assigned CBT lessons prior to FAM-500.

(2) All IUTs shall complete the course rules class, load computation class, crew resource management class, CNCS/PFPS introduction class, and ECCS class prior to FAM-500.

(3) All IUTs shall complete the NATOPS open book exam, course rules exam, and SOP exam prior to FAM-500.

(4) All IUTs shall complete the navigation class prior to NAV-505.

(5) All IUTs shall complete the TERF class prior to CAL-507.

(6) All IUTs shall complete the NATOPS closed book exam prior to IUT-511.

(7) All IUTs shall complete the NS class prior to NS-513.

e. Flight and Simulator Event Training (12 Flights, 19.5 Hours)

FAM-500 1.5 E 1 CH-46E A

Goal. Introduce techniques of instruction.
Requirement

Discuss:
CRM.
Course rules.

Introduce:
Course rules.
Techniques of instruction.
All FAM stage maneuvers.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. ACAD-005 through ACAD-012.

FAM-501 1.5 E 1 CH-46E/WST A/S

Goal. Introduce techniques of instruction.

Requirement

Discuss:
CRM.
Course rules.

Introduce:
Course rules.
Techniques of instruction.
All familiarization stage maneuvers.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. FAM-500.

FAM-502 1.5 E 1 CH-46E/WST A/S N*

Goal. Night unaided instructional techniques introduction.

Requirement

Discuss: CRM.

Introduce:
Local area orientation.
Night unaided FAM stage maneuvers.

Review:
All previously introduced maneuvers as necessary.
Instructional techniques.
Single engine landings.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all Night FAM Maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. FAM-501.

INST-503 1.5 E 1 CH-46E/WST A/S

Goal. Introduce instrument instructional techniques.

Requirement

Discuss: CRM.

Introduce:
Basic instrument procedures.
Basic instrument patterns (vertical S-l and Oscar patterns).

Review: Any previously introduced maneuvers as necessary. Terminate flight with an instrument approach.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all INST Maneuvers per the FRS Standardization Manual and NATOPS Instrument Flight Manual.

INST-504 1.5 E 1 CH-46E/WST A/S

Goal. Continue instrument instructional techniques.

Requirement

Discuss: CRM.

Review:
IFR flight planning.
Filing DD-175 and DD-l75-1.
Airway procedures.
Precision and non-precision instrument approaches.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all INST Maneuvers per the FRS Standardization Manual and NATOPS Instrument Flight Manual.

Prerequisite. INST-503.

NAV-505 1.5 E 1 CH-46E A

Goal. Introduce navigation procedures instructional techniques.

Requirement

Discuss: Navigation and identifying positions using charts and maps.

Review:
- CRM.
- Lost plane procedures.
- Time/distance checks.
- Distance information and map legend information.
- Use of jet logs and enroute navigational computer.
- Mountainous area landings.
- CALs.
- Power available.
- Techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all NAV Procedures per the FRS Standardization Manual and Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5
CH-46E.

Prerequisite. ACAD-021.

EXT-506 1.5 E 1 CH-46E A

Goal. Introduce external cargo procedures instructional techniques.

Requirement

Discuss: CRM.

Review:
- External operations.
- Cargo hook procedures.
- Techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all EXT Procedures per the FRS Standardization Manual and Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E.

External Syllabus Support. HST, external load, pendant and hook.

CAL-507 1.5 E 1 CH-46E/WST A/S

Goal. Introduce CAL/TERF instructional techniques.

Requirement

Discuss:
- CRM.
- Zone brief.

Review:
- CALs.
- Power checks.
- Techniques of instruction.
- Masking/unmasking.
- Bunts/Rolls.
- Quick stop.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all CAL/TERF procedures per the FRS Standardization Manual and Air NTTP 3-22.1/Air NTTP 3.22.3/ Air NTTP 3.22.5 CH-46E.

Prerequisite. ACAD-022.

External Syllabus Support. TERF area.

FAM 508 1.5 E 1 CH-46E/WST A/S

Goal. Introduce/evaluate ECCS techniques of instruction.

Requirement

Discuss: (ref: CH-46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)
- ECCS system.
  - Theory of operation.
  - Preflight/start checklist.
  - Shutdown checklist.
  - Normal mode operation.
  - Manual mode operation.
- Emergencies (instructional technique).
  - Single engine failure takeoff.
  - Single engine failure in HOGE.
  - Single engine failure in flight.
  - Compressor stall.
  - ECCS failure in flight.
  - Flex shaft failure in flight.
  - Sprag clutch slippage.
  - Practice autorotations.

Introduce/Evaluate:
- Normal Engine Start.
- Normal shutdown.

Emergencies (instructional technique):
- Single engine failure takeoff.
- Single engine failure in HOGE.
- Single engine failure in flight.
- Compressor stall.
- ECCS failure in flight.
- Flex shaft failure in flight.

Sprag clutch slippage.
Practice autorotations.

Performance Standards. Pilot shall demonstrate knowledge of ECCS, NATOPS checklists and instructional technique with ECCS.

Prerequisite. ACAD-008.

FORM-509 1.5 E 2 CH-46E A

Goal. Introduce formation flight instructional techniques.
Requirement

Discuss:
CRM.
Safety parameters.

Review:
All formation maneuvers.
Techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all FORM Procedures per the FRS Standardization Manual and Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E.

IUT-511 3.0 E 1 CH-46E A

Goal. Instructor standardization check.

Requirement

Discuss:
CRM.
Safety parameters.

Evaluate: All phases of instruction and techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all procedures per the FRS Standardization Manual, Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E and NATOPS Manual.

Prerequisite. ACAD-041.

NS-513 1.5 E 1 CH-46E A NS

Goal. Introduce initial NS instructional techniques.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS failures.
Depth perception.

Cockpit lighting.
Emergency procedures.

Evaluate: All phases and techniques of instruction to include the following:
Taxi.
Vertical takeoff.
Vertical landing.
Square patterns.
Touch and go patterns.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all NS procedures per the FRS Standardization Manual, MAWTS-1 NS Manual and Air NTTP 3-22.1/Air NTTP 3.22.3/Air NTTP 3.22.5 CH-46E.

Prerequisite. ACAD-031, completion of NS NSFI Syllabus per MAWTS-1 Course Catalog.

150. REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS (RQD)

1. RQD Overview

a. Purpose. To determine qualification for designation in specific flight skills, systems, knowledge, and flight leadership traits.

b. General. This section enables squadrons to document completion of annual NATOPS and instrument evaluation flights as well as flight leadership syllabus events.

(1) For RQD-600 the evaluating pilot shall be a designated NATOPS Instructor (NI) or Assistant NATOPS Instructor (ANI). For RQD-601 the evaluating pilot shall be a designated Instrument Evaluator.

(2) Prerequisites. See OPNAVINST 3710.7, OPNAVINST 4790.2, and the CH-46E NATOPS Flight Manual.

c. Minimum Crew Requirements. P/CP/CC/ (AGO if NS are used).

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog, CH-46E NATOPS Flight Manual (e.g. – RQD 600: Open Book Exam, Closed Book Exam), and OPNAVINST 3710.7 (e.g. – RQD 601: Instrument Ground School).

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours)

RQD-600 1.5 R,E 1 CH-46E/WST A/S (N)

Goal. Conduct annual NATOPS evaluation and evaluate utilization of all aspects of the CH-46E as a weapons system.

Requirement

Discuss: All emergency procedures and Standardization Manual maneuvers.

Review:
Emergency Procedures (Simulated).
Standardization Manual maneuvers.
Familiarization maneuvers.

Performance Standards. The performance expected by the evaluator in this flight shall be commensurate with the experience of the pilot under evaluation.

Prerequisite. Qualified H2P.

External Syllabus Support. WST/APT (If sim is utilized).

RQD-601 1.5 E WST/1 CH-46E S/A (N)

Goal. Conduct annual instrument evaluation and evaluate all phases of instrument flight to include precision and non-precision approaches, partial panel, and instrument holding.

Requirement

Discuss: Instrument procedures per Instrument Flight Manual.

Review: Procedures contained in the NATOPS Instrument Flight Manual.

Performance Standards. Pilots shall demonstrate performance in handling instrument related emergencies to include unusual attitude recoveries.

Prerequisite. Per OPNAV 3710.7.

External Syllabus Support. Instrument capable WST/APT. Instrument capable NAVAID or facility if flown in aircraft.

2. Flight Leadership (FL)

a. Purpose. To demonstrate tactical skills in a flight leadership role.

b. General

(1) This section enables squadrons to document flight leadership workups and evaluations.

(2) For RQD-604 and 605 the evaluating pilot shall be a designated NATOPS Instructor or ANI.

(3) Helicopter Aircraft Commander. The HAC must have completed all of the requirements for and possess to an advanced degree the knowledge proficiency, and capabilities of an H2P. He must further meet the requirements as set forth in detail in OPNAVINST 3710.7. Refresher pilots previously qualified as HACs, upon completion of RQD-600, may be designated as Aircraft Commanders by unit commanding officers.

(4) Section Leader. A section leader must be a HAC. In addition, this pilot must be fully qualified to lead a section under all conditions in performance of any of the squadron tasks.

(5) Division Leader. A division leader must be a HAC with no less than 600 total flight hours. Of this total, 200 hours must be in rotary-wing aircraft. Of these 200 hours, 50 must be in squadron model.

(6) Flight Leader. A flight leader must be a qualified division leader with no less than 750 total flight hours. Consideration will be given to rank and experience, when warranted, to allow for exceptions by the commanding officer.

(7) Mission Commander. A mission commander must be a designated flight leader. A mission commander is responsible for all phases of the assigned mission except those aspects of safety of flight that are related to the physical control of the aircraft and fall within the prerogatives of the pilot in command.

(8) Instruction in a given flight leadership level can be provided by a pilot with that designation. The evaluation flight for a given flight leadership level shall be provided by a pilot at least one flight leadership level higher.

(9) Initial designation requires completion of all flight leadership events specific to a designation. Re-designation requires refly of senior flight leadership level event.

c. Minimum Crew Requirements. P/CP/CC/ (AGO when conducted on NS).

d. Ground/Academic Training. MAWTS-1 Assault Support Package.

e. Flight Training. (12 Flights, 18.0 Hours).

FL-602 1.5 E 1 CH-46E/WST A/S

Goal. Conduct day HAC review. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers, aircraft systems.

Performance Standards. Pilots shall demonstrate, to an advanced degree, the knowledge, proficiency and capabilities of an H2P, to include CRM, with emphasis on decision making and situational awareness.

Prerequisite. Per NATOPS, Squadron SOP.

FL-603 1.5 E 1 CH-46E/WST) A/S N

Goal. Conduct night HAC review. Night and NS. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers and aircraft systems.

Performance Standards. Pilots shall demonstrate, to an advanced degree, the knowledge, proficiency and capabilities of an H2P, to include CRM, with emphasis on decision making and situational awareness.

Prerequisite. Per NATOPS, Squadron SOP, and NSQ.

FL-604 1.5 E 1 CH-46E A

Goal. Conduct day HAC check. Check will be conducted per the CH-46E NATOPS Flight Manual and OPNAVINST 3710.7 and include all practicable operations and procedures previously covered. Fly at (or simulate) high gross weight condition.

Requirement

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers and aircraft systems.

Performance Standards. Pilots shall demonstrate, to an advanced degree, the knowledge, proficiency and capabilities of an H2P, to include CRM, with emphasis on decision making and situational awareness.

Prerequisite. Per NATOPS, Squadron SOP, FL-602, and FL-603.

FL-605 1.5 E 1 CH-46E A N

Goal. Conduct night HAC check. Night and NS. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers, aircraft systems.

Performance Standards. Pilots shall demonstrate, to an advanced degree, the knowledge, proficiency and capabilities of an H2P, to include CRM, with emphasis on decision making and situational awareness.

Prerequisite. Per NATOPS, Squadron SOP, and FL-602 and 603.

FL-606 1.5 E 2 Assault Support Aircraft A

Goal. Conduct day section leader training.

Requirement. SLUI shall plan, brief, lead, and debrief a day section tactical flight to include escort and fire support considerations.

Performance Standards. Pilots shall conduct this flight per the standards in T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisites. Designated HAC, TAC-371.

Ordnance. As required.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, authorized TERF area.

FL-607 1.5 E 2 Assault Support Aircraft A N

Goal. Conduct night section leader training.

Requirement. SLUI shall plan, brief, lead, and debrief a night section tactical flight to include escort and fire support considerations.

Performance Standards. Pilots shall conduct this flight under the standards required in T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. Designated HAC and TAC-372.

Ordnance. As required.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, Authorized TERF area.

FL-608 1.5 R E 2 Assault Support aircraft A (N)

Goal. Section leader check.

Requirement. SL or SLUI shall plan, brief, lead, and debrief a day or night section tactical flight to include escort, fire support considerations and aerial gunnery.

Performance Standards. Pilots shall conduct this flight under the standards required in T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-606 and 607.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, Authorized TERF area.

FL-609 1.5 E 3 OR 4 Assault Support aircraft A

Goal. Conduct day division leader training.

Requirement. DLUI shall plan, brief, lead, and debrief a day division tactical flight to include escort and fire support considerations.

Performance Standards. Pilots shall conduct this flight per T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-608.

Ordnance. As required.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, Authorized TERF area.

FL-610 1.5 E 3 OR 4 Assault Support aircraft A N

Goal. Conduct night division leader training.

Requirement. DLUI shall plan, brief, lead, and debrief a night division tactical flight to include escort and fire support considerations.

Performance Standards. Pilots shall conduct this flight per T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-608.

Ordnance. As required.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, Authorized TERF area.

FL-611 1.5 R,E 3 OR 4 Assault Support aircraft A (N)

Goal. Division leader check.

Requirement. DLUI shall plan, brief, lead, and debrief a day division tactical flight with fire support considerations and actual escorts.

Performance Standards. Pilots shall conduct this flight per T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning. Flight shall include escorts.

Prerequisite. FL-609 and 610.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, Authorized TERF area, RW and/or FW escort.

FL-612 1.5 R, E 5+ Assault Support aircraft A (N)

Goal. Flight leader check or flight leader review.

Requirement. FLUI shall plan, brief, lead, and debrief a multi-element tactical flight. Flight shall include fire support considerations and actual escorts.

Performance Standards. Pilots shall conduct this flight per T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning. Demonstrate ability to plan, coordinate and control all supporting arms, escorts and agencies in meeting mission requirements.

Prerequisite. FL-611, and TAC-375.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, Authorized TERF area, RW and/or FW escort.

FL-613 1.5 R E 2+ Div (N)

Goal. Air mission commander check or review.

Requirement. AMCUI shall plan, brief, lead, and debrief a multi-element tactical mission. AMCUI should be evaluated on ability to integrate 6 functions of Marine Aviation. Preferably executed from a C&C platform.

Performance Standards. Pilots shall conduct this flight per T&R Program Manual and MCO 3501.4A, MCCRES. Use Air NTTP 3-

22.1/Air NTTP 3.22-3/Air NTTP 3.22.5 CH-46E as source documents for planning.

Prerequisite. FL-612, and TAC-402.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

Range Requirements. Aerial Gunnery range and/or EW/threat simulation range as required.

External Syllabus Support. CAL zones, Authorized TERF area, RW and/or FW escort.

151. GRADUATE LEVEL COURSES

1. General. There are 5 graduate level courses that qualify instructors for specific portions of the T&R syllabus. These courses are as follows:

a. Weapons and Tactics Instructor (WTI).

b. Terrain Flight Instructor (TERFI).

c. Night Systems Familiarization Instructor (NSFI).

d. Night Systems Instructor (NSI).

e. Defensive Measures Instructor (DMI).

2. The current MAWTS-1 Course Catalog lists the above courses by training codes. There will be no refly factors for these instructor flights. T&R syllabus proficiency in stage is considered sufficient to maintain proficiency as an instructor.

152. SPECIAL TRAINING FLIGHTS (STF). The purpose of this section is for aircrew to develop proficiency in flight procedures and techniques involving special training requirements. Due to the special equipment and logistical support, facilities or supporting units required to conduct special training flights, squadrons may complete these flights as appropriate support becomes available and mission requirements dictate.

1. STF Overview

a. Purpose. To teach the fundamentals of flying in an arctic weather environment; flying in a dusty, high temperature, high density altitude desert environment; and the ability to conduct day water takeoffs and landings.

b. Prerequisite. SCAL-210.

c. Crew Requirements. P/CP.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Event, 2.0 Hours)

SSTF-620 2.0 WST S (N)

Goal. Introduce helicopter operations in an arctic weather environment; flying in a dusty, high temperature, high density altitude desert environment; and the ability to conduct day water takeoffs and landings.

Requirement

Discuss:
- Cold dry conditions.
- Blowing snow/white-out conditions.
- Icing/aircraft anti-ice.
- Aircraft hot and cold weather limitations.
- High density altitude
- Blowing sand / brown-out conditions.
- CRM requirements for water landings.
- Water landing checklist.
- Waterfall effect and salt encrustation.
- Rescue with the side door down procedures and limitations.
- Inadvertent HEFS deployment.
- Ditching.

Introduce:
- Snow landing techniques.
- Desert landing techniques.
- Water taxi.
- Vertical water takeoff and landing.
- Running water takeoff and landing.

Review: NATOPS Chapter 13.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing, demonstrate ability to perform no-hover landings. Recognize and control closure and descent rates, perform vertical landing and takeoff, perform water taxi.

Prerequisite. SCAL-210.

External Syllabus Support. Arctic weather/desert environment/ water landing capable WST.

2. Arctic Weather Training (AWT)

a. Purpose. To teach the fundamentals of, and/or develop proficiency in any aspect of flying in cold weather with snow on the ground.

b. General

(1) Ambient air temperatures will normally be below 10 degrees Fahrenheit with snow on the ground. Pilots must note that cold dry conditions with blowing snow will significantly increase the difficulty of arctic weather flight.

(2) Aircrew shall be NSQ (appropriate light level) for all NS flights.

(3) Prerequisite. SCAL-210.

c. Minimum Crew Requirements. P/CP/CC/ (AGO if NS are used).

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 2.0 Hours)

AWT-621 2.0 1 CH-46E A (N)

Goal. Introduce helicopter operations in a cold weather environment.

Requirement

Discuss:
Cold dry conditions.
Blowing snow.
White-out conditions.
Aircraft cold weather limitations.
Aircraft anti-ice.
Icing.

Introduce: Snow landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing, demonstrate ability to perform no-hover landings.

Prerequisite. CAL-211.

External Syllabus Support. Snow on the ground in the landing zone.

3. Desert Operations (DES)

a. Purpose. To develop proficiency in aspects of flying in a dusty, high temperature, high density altitude desert environment.

b. General

(1) Aircrew shall be NSQ (appropriate light level) for all NS flights.

(2) Prerequisite. CAL-211

c. Minimum Crew Requirement. P/CP/CC (AGO if NS are used).

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 2.0 Hours)

DES-622 2.0 1 CH-46E A (N)

Goal. Introduce helicopter operations in a desert environment.

Requirement

Discuss:
High density altitude.
Blowing sand.
Brown-out conditions.
Aircraft hot weather performance limitations.

Introduce: Desert landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing, demonstrate ability to perform no-hover landings.

Prerequisites. CAL-211.

External Syllabus Support. Desert environment.

4. Water Landings (WTR)

a. Purpose. To develop water landing skills.

b. General. Pilots shall practice landings in fresh water.

c. Crew Requirements. P/CP/CC.

d. Ground/Academic Training. Review CH-46E NATOPS Flight Manual, Chapter 9.8.

e. Flight and Simulator Event Training (1 Event, 1.0 Hour)

WTR-623 1.0 1 CH-46E A

Goal. Demonstrate the ability to conduct day water takeoffs and landings.

Requirement

Discuss:
CRM requirements for water landings.
Water landing checklist.
Waterfall effect and salt encrustation.

Rescue with the side door down procedures and limitations.
Inadvertent HEFS deployment.
Ditching.

Introduce:
Water taxi.
Vertical water takeoff.
Vertical water landing.
Running water takeoff.
Running water landing.

Review: Over-water rescue hoist operations.

Performance Standards. Pilots shall recognize and control closure and descent rates, perform vertical landing and takeoff, perform water taxi.

Prerequisite. CAL-211.

External Syllabus Support. Authorized fresh water landing area.

5. Air Combat Maneuvering (ACM)

a. Purpose. To introduce ACM in the simulator.

b. General

(1) Conduct ACM with a section of helicopters against 1 or 2 RW/FW bandits.

(2) SACM-625 shall be instructed by a DMI.

c. Crew Requirements. P/CP.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Event, 2.0 Hours)

SACM-624 2.0 WST S

Goal. Introduce helicopter ACM.

Requirement

Discuss:
CRM.
Crew comfort levels.
Lookout doctrine.
Common terminology.
Closure rate/radius of turn/energy state.
Use of onboard ASE.
Use of onboard defensive weapons.

Introduce: Helicopter ACM in a section versus RW/FW bandits per the Air NTTP 3-22 publications.

Review: Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Pilots shall demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute within NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, meet learning objectives as established by Air NTTP CH46-E 3.22.3 Appendix B, demonstrate understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. DMQ.

External Syllabus Support. ACM capable WST/APT.

6. Functional Check Flights (FCF)

a. Purpose. To obtain an FCF designation.

b. General. Conduct the full range of FCF procedures.

c. Crew Requirements. P/CP/CC.

d. Ground/Academic Training. NATOPS Chapter 10, Functional Check Flight checklist, squadron SOP for maintenance flights, and 4790 parameters and requirements.

e. Flight and Simulator Event Training. (1 Event, 2.0 Hours)

FCF-630 2.0 R,E 1 CH-46E A

Goal. Functional Check Flight designation.

Requirement. Effectively demonstrate the ability to perform a full card Functional Check Flight.

Discuss:
- Maintenance test procedures.
- Troubleshooting techniques.
- Squadron SOP for maintenance flights.
- MIMS.

Review: NATOPS Chapter 10, Functional Check Flight Checklist.

Performance Standards. Pilots shall demonstrate the ability to conduct a full-card Functional Check Flight correctly, efficiently, and demonstrate the ability to troubleshoot aircraft problems.

Prerequisite. Squadron FCF syllabus and reading.

7. CRM Training

a. Purpose. To conduct annual CRM training.

b. General. Aircrew shall be NSQ (appropriate light level) for all NS flights.

c. Minimum Crew Requirement. P/CP/CC (AGO if NS are used).

d. Ground/Academic Training. Annual CRM training as outlined in the CH-46E NATOPS Flight Manual and OPNAVINST 1542.7.

e. Flight and Simulator Event Training (1 Event, 2.0 Hours)

CRM-640 1.5 R,E 1 CH-46E/WST A/S (N)

Goal. Practice/review CRM principles presented in the CH-46E CRM Training course while executing a simulated mission scenario.

Requirement

Discuss:
- Decision making.
- Assertiveness.
- Mission analysis.
- Communication.
- Leadership.
- Adaptability/flexibility.
- Situational awareness.

Evaluate:
- Decision making.
- Assertiveness.
- Mission analysis.
- Communication.
- Leadership.
- Adaptability/Flexibility.
- Situational Awareness.
- CRM during emergencies and system failures.

Performance Standards. Pilots shall demonstrate effective use of the CRM 7 critical skills areas.

Prerequisite. Completion of the CH-46E CRM course.

External Syllabus Support. WST/APT.

153. QUALIFICATION AND DESIGNATION TRACKING. The purpose of this section is to establish training codes to track qualifications, designations, and instructor and flight leadership proficiency. The listed training codes shall not have any associated flight hour requirement or CRP.

1. Qualifications

a. Purpose. To establish training codes in order to track qualifications.

b. General

(1) Qualification training codes (QUAL) shall not have any associated flight time requirement or CRP. Qualification training codes can be logged on the effective date of a qualification and should be a one-time occurrence unless the qualification is lost. If a qualification is lost, the previously logged qualification code should be removed and subsequently re-entered upon becoming re-qualified.

(2) Prerequisites. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

c. Crew Requirement. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

d. Ground/Academic Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training. None.

QUAL-650

Goal. Tracking for TERF Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as TERF Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. TERF Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-651

Goal. Tracking for NS HLL Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as NS HLL Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. NS HLL Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-653

Goal. Tracking for CQ Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as CQ Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. CQ Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-654

Goal. Tracking for NS LLL Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as NS LLL Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. NS LLL Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-655

Goal. Tracking for DM Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as DM Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. DM Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-657

Goal. Tracking for FRS TERFQ Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as FRS TERFQ shall be placed in the NATOPS jacket and APR.

Prerequisite. FRS TERFQ Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-658

Goal. Tracking for FRS NSQ.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as FRS NSQ shall be placed in the NATOPS jacket and APR.

Prerequisite. FRS NSQ IAW MCO P3500.14 and MCO P3500.50.

2. Designations

a. Purpose. To establish training codes in order to track instructor and flight leadership designations.

b. General

(1) Designation training codes for instructors (IDESIG) and flight leadership (DESIG) shall not have any associated flight time requirements or CRP. Designation training codes shall be logged for each event in which the individual acts in the capacity of the associated designation (IDESIG-660: instructing a TERFI required event; DESIG-670: leading a section). Effective use of these training codes will facilitate accurate tracking of instructor and flight leadership proficiency at the squadron level.

(2) Prerequisites. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

c. Crew Requirement. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

d. Ground Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

IDESIG-660

Goal. Tracking for TERFI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as TERFI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the TERFI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-661

Goal. Tracking for DMI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as DMI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the DMI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-662

Goal. Tracking for NSFI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as NSFI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the NSFI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-663

Goal. Tracking for NSI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as NSI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the NSI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-666

Goal. Tracking for WTI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as WTI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the WTI syllabus IAW MCO P3500.12, MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-667

Goal. Tracking for NSSI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as NSSI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the NSSI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-668

Goal. Tracking for FRSI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as FRSI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the FRSI syllabus IAW MCO P3500.14 and MCO P3500.50.

DESIG-670

Goal. Tracking for Section Leader designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as a Section Leader shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the Section Leader syllabus IAW MCO P3500.14 and MCO P3500.50.

DESIG-671

Goal. Tracking for Division Leader designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as a Division Leader shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the Division Leader syllabus IAW MCO P3500.14 and MCO P3500.50.

DESIG-672

Goal. Tracking for Flight Leader designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as a Flight Leader shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the Flight Leader syllabus IAW MCO P3500.14 and MCO P3500.50.

DESIG-673

Goal. Tracking for AMC designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as an AMC shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the AMC syllabus IAW MCO P3500.14 and MCO P3500.50.

DESIG-674

Goal. Tracking for FCF designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as FCF designated shall be placed in the NATOPS jacket and APR.

Prerequisite. FCF designated IAW MCO P3500.14, MCO P3500.50, OPNAVINST 4790, and Squadron SOPs.

154. GROUND TRAINING/ACADEMIC TRACKING. The purpose of this section is to establish training codes (ACAD-700 through ACAD-899) to track the completion of ground training/academic requirements IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog. The listed training codes shall not have any associated flight hour requirement or CRP.

1. Ground/Academic Training

a. Purpose. To establish training codes in order to track ground training/academic requirements.

b. General

(1) Ground training/academic training codes (ACAD) shall not have any associated flight time requirements or CRP. Ground training/academic training codes shall be logged each time the requirement is completed.

(2) THIS STAGE WILL BE COMPLETED AT A LATER DATE FOLLOWING THE REVISION AND UPDATE OF THE MAWTS-1 COURSE CATALOG.

(3) Prerequisites. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

c. Ground Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

d. Flight and Simulator Event Training. N/A.

ACAD-700
ACAD-899

160. ORDNANCE REQUIREMENTS

				INDIVIDUAL REQUIREMENTS						
PLT's REQ'D TO BE CSP	# CC & AG/O REQ'D TO BE CSP		T&R CODE	EXPENDABLES		.50 CAL		OTHER		
				TOTAL CHF/FLR REQ'D PER "X"		RNDS REQ'D PER "X"		ORD REQ'D PER "X"		
	1-CC	AG/O		CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO	7.62
(100 LEVEL)										
NO ORDNANCE REQUIRED										
(200 LEVEL)			CORE SKILLS							
16	8	8	AG 281			500*	500	2		
~~X~~			282				500			
			283				500			
(300 LEVEL)			CORE SKILLS							
16	8	8	AG 321	as req'd	as req'd	500*	500			
~~X~~			332				500			
12			GTR 331	0	60	500	500			
12			GTR 332	40	20			2	Any avl	
12	6	6	TAC371	opt.	opt.					
			372	opt.	opt.	opt.				
			374	20	40	opt.	500			
			375	20	40	opt.	500			
(400 level)			CORE PLUS SKILLS (Note: DM 441/442 req'd to be DM qual'd)							
12	6	6	TAC401	20	40	500*	500			
			402	20	40	500*	500			
12	6	6	DM 441	20	40					
			442	20	40					
~~X~~	6		TG 481							500
	6		482							500

	100-400 LEVEL PHASES						
	CHAFF	FLARE	.50 CAL		SMOKE	PYRO	7.62
Sub TOTAL:	160	320	0	5,500	4	Any avl	1000

Rounds required for aircrew annotated with an asterisk (*) are shown for planning purposes only. In order to meet learning objectives for the event, an initial/Refresher/delinquent aircrew shall be afforded the exposure to the requisite ordnance in order to be complete/qualified for the given event. Consideration should be given to meeting learning objectives by matching up an initial/Refresher/delinquent pilot with an initial/Refresher/delinquent crew chief, aerial gunner/observer who are required to expend the appropriate ordnance.

				UNIT REQUIREMENTS							
PLT's REQ'D TO BE CSP	# CC & AG/O REQ'D TO BE CSP		T&R CODE	EXPENDABLES		.50 CAL			OTHER		
				TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT		
	2-CC	AG/O		CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO	7.62
(100 LEVEL)											
NO ORDNANCE REQUIRED											
(200 LEVEL)			CORE SKILLS								
16	8	8	AG 281				4000	4000	24		
~~X~~			282				4000	4000			
			283				4000	4000			
(300 LEVEL)			CORE SKILLS								
16	8	8	AG 321				4000	4000	24	any avl	
~~X~~			332				4000	4000			
12	6	6	GTR 331	0	720		3000	3000			
12	6	6	GTR 332	480	240		3000	3000	24	any avl	
12	6	6	TAC371								
			372								
			374	240	480						
			375	240	480						
(400 LEVEL)	CORE PLUS SKILLS (Note: DM 441/442 req'd to be DM qual'd)										
12	6	6	TAC401	240	480		3000	3000			
			402	240	480		3000	3000			
12	6	6	DM 441	240	480						
			442	240	480						
~~X~~	6		TG 481								3000
	6		482								3000

	REQ'D TO ACHIEVE/MAINTAIN CORE COMPETENCY					
	CHAFF	FLARE	.50 CAL(CC&AG/O)	SMKE	PYRO	7.62
Sub TOTAL:	1460	2880	64,000	48	Any avl	6000

DOES NOT INCLUDE ORD REQ'D FOR TAC 401/402 (CORE PLUS SKILLS)

				INDIVIDUAL REQUIREMENTS						
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES		.50 CAL		OTHER		
				TOTAL CHF/FLR REQ'D PER "X"		RNDS REQ'D PER "X"		ORD REQ'D PER "X"		
	3-CC	AG/O		CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO	7.62
INSTRUCTOR CERTIFICATION (500 LEVEL)										
X	2		AG 540				500	2	Any avl	
			541				500			
			542				500			
			543				500			
2	2									
			581	20	40					
			582	20	40					
X	2		TG 545							500
			546							500
			547							500

	INSTRUCTOR PHASE						
	CHAFF	FLARE	.50 CAL		SMKE	PYRO	7.62
Sub TOTAL:	40	80	0	2,000	0	Any avl	1500

				UNIT REQUIREMENTS								
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES		.50 CAL			OTHER			
				TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT			
	4-CC	AG/O		CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO	7.62	
INSTRUCTOR CERTIFICATION												
X	2		AG 540				1000					
			541				1000					
			542				1000					
			543				1000					
2	2											
			581	40	80							
			582	40	80							
X	2		TG 545									500
			546									500
			547									500

	REQ'D TO FOR INITIAL CERTIFICATION/CORE COMPETENCY					
	CHAFF	FLARE	.50 CAL	SMKE	PYRO	7.62
Sub TOTAL:	80	160	4,000	0	Any avl	3000

PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	INDIVIDUAL REQUIREMENTS					
				EXPENDABLES		.50 CAL		OTHER	
				TOTAL CHF/FLR REQ'D PER "X"		RNDS REQ'D PER "X"		ORD REQ'D PER "X"	
	5-CC	AG/O		CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO
REQUIREMENTS, QUALIFICATIONS AND DESIGNATION (600 LEVEL)									
12			FL 602						
			603						
			604						
			605						
6			606	as req'd	as req'd	as req'd			
			607	as req'd	as req'd	as req'd			
			608	20	40	200			
4			609	as req'd	as req'd	as req'd			
			610	as req'd	as req'd	as req'd			
			611	20	40	200			
2			612	20	40	200			
2			613						

	FLIGHT LEADERSHIP STAGE					
	CHAFF	FLARE	.50 CAL		SMOKE	PYRO
Sub TOTAL:	60	120	600	0	0	Any avl

PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	UNIT REQUIREMENTS						
				EXPENDABLES		.50 CAL			OTHER	
				TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT	
	6-CC	AG/O		CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO
REQUIREMENTS, QUALIFICATIONS AND DESIGNATION (600 LEVEL)										
12			FL 602							
			603							
			604							
			605							
6			606							
			607							
			608	120	240			1200		
4			609							
			610							
			611	80	160			800		
2			612	40	80			400		
2			613							

	REQ'D FOR INITIAL DESIGNATION/CORE COMPETENCY				
	CHAFF	FLARE	.50 CAL(CC &AG/O)	SMKE	PYRO
Sub TOTAL:	240	480	2,400	0	Any avl

In order for an individual to meet all event requirements, the following ordnance is required:

	INDIVIDUAL REQUIREMENTS						
	EXPENDABLES		.50 CAL		OTHER		
	CHAFF	FLARE	PILOT	CC, AG/O	SMOKE	PYRO	7.62
TOTAL:	280	500	1100	7500	0	As req'd	1000

In order for a unit to meet all core skill and core competency requirements, the following ordnance is required:

	UNIT REQUIREMENTS					
	EXPENDABLES		.50 CAL	OTHER		
	CHAFF	FLARE		SMOKE	PYRO	7.62
TOTAL:	1760	3520	64,000	46	As req'd	9000

The above is not tied to annual requirements, rather to the attainment of core competency. Annual requirements (e.g. to maintain individuals proficiency, unit's core competency) may exceed the totals above due to a specific refly interval of less than 365 days (e.g. TAC codes).

	100-400 LEVEL PHASES					
	CHAFF	FLARE	.50 CAL		SMOKE	PYRO
Sub TOTAL:	180	300	0	5,500	4	Any avl.

Rounds required for pilots annotated with an asterisk (*) are shown for planning purposes only. In order to meet learning objectives for the event for an initial/Refresher/delinquent pilot shall be afforded the exposure to the requisite ordnance in order to be complete/qualified for the given event. Consideration should be given to meeting learning objectives by matching up an initial/Refresher/delinquent pilot with an initial/Refresher/delinquent crew chief, aerial gunner/observer who are required to expend the appropriate ordnance.

170. MOS SYLLABUS MATRIX. These tables display specific 100 – 600 level event information such as; flight/simulator hours, refly interval, prerequisites, CRP, chaining, etc. in a table format.

CH-46 PILOT														
100 SERIES CORE SKILL INTRODUCTION														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
ACADEMICS														
ACAD	001		30.0	*									PFAM CLASS	001
ACAD	002		1.0	*									WELCOME ABOARD	002
ACAD	003		0.5	*									ODO CLASS	003
ACAD	004		0.5	*									SDO CLASS	004
ACAD	005			*					R,MR				COURSE RULES CLASS	005
ACAD	006		1.0	*					R,MR				LOAD COMP CLASS	006
ACAD	007			*									CNCS/PFPS INTRO	007
ACAD	008		3.0	*					R,MR				ECCS CLASS	008
ACAD	009		1.0	*					R,MR				CBTs	009
ACAD	010			*					R,MR				NATOPS OPEN BOOK EXAM	010
ACAD	011			*					R,MR				COURSE RULES EXAM	011
ACAD	012			*					R,MR				SOP EXAM	012
ACAD	021		0.5	*									NAVIGATION CLASS	021
ACAD	022		0.5	*									TERF CLASS	022
ACAD	023		2.0	*									PFPS ADVANCED CLASS	023
ACAD	031		1.0	*									NS CLASS	031
ACAD	041			*					R,MR				CLOSED BOOK EXAM	041
FAM														
SFAM	100		2.0	*	S		D		R,MR	E	0.5		SIM-START	100
SFAM	101		2.0	*	S		D	100		E	0.5		SIM-PATTERN	101
SFAM	102		2.0	*	S		D	101		E	0.5		SIM-ENG MAL	102
SFAM	103		2.0	*	S		D	102		E	0.5		SIM-RUN LAND	103
SFAM	104		2.0	*	S		D	103	R,MR	E	0.5		SIM-AUTO	104
SFAM	105		2.0	*	S		D	104		E	0.5		SIM-EMER THROT	105
SFAM	106		2.0	*	S		D	105		E	0.5		SIM-REVIEW	106
SFAM	107		2.0	*	S		D	106	R,MR	E	0.5		SIM-ALL FAM	107
SFAM	118		2.0	*	S		D	107	R,MR	E	0.0		SIM-ECCS GRD	190
SFAM	119		2.0	*	S		D	118	R,MR	E	0.0		SIM-ECCS FLIGHT	191
FAM	108	0.0		*	A	1	D	119	R,MR	E	0.0		GROUND	108
FAM	109	2.0		*	A	1	D	001,002,003, 004,005,006, 007,008,009, 010,011,012, 108		E	1.0		START	109
FAM	110	2.0		*	A	1	D	109		E	1.0		PATTERN	110
FAM	111	2.0		*	A	1	D	110		E	1.0		REV FAM	111
FAM	112	2.0		*	A	1	D	111		E	1.0		AFCS	112
FAM	113	1.5		*	A	1	D	112	R,MR	E	1.0		EMER THROT	113
FAM	114	1.5		*	A	1	D	113		E	1.0		ETS	114
FAM	115	1.5		*	A	1	D	114		E	1.0		REV	115
FAM	116	1.5		*	A	1	D	115	R,MR	E	1.0		PROG CHECK	116
FAM	117	1.5		*	A	1	N*	116	R,MR	E	1.0		NIGHT FAM	117
											13.0			

CH-46 PILOT														
100 SERIES CORE SKILL INTRODUCTION														
STAGE	**TRNG CODE**	**FLT HOURS**	**SIM HOURS**	**REFLY INT**	**DEVICE**	**# OF A/C**	**CONDITIONS**	**PREREQ**	**POI**	**EVAL**	**CRP**	**CHAINING**	**EVENT DESC**	**OLD CODE**
INST														
SINST	120		2.0	*	S		D			E	1.0		SIM-CNCS FAM	
SINST	121		2.0	*	S		(N*)	120	R,MR	E	1.0		SIM-BI/RI	121
SINST	122		2.0	*	S		(N*)	121	R,MR	E	1.0		SIM-TACAN/GCA	120
INST	123	1.5		*	A/S	1	(N*)	122	R,MR	E	1.0		TACAN/GCA	123
INST	124	1.5		*	A/S	1	(N*)	123	R,MR	E	1.0		ENROUTE	124
INST	125	1.5		*	A/S	1	(N*)	124	R,MR	E	1.0		INST EVAL	126
											6.0			
NAV														
NAV	131	1.5		*	A	1	D	021,023,112		E	1.0		DAY NAV-1:250	130
NAV	132	1.5		*	A	1	D	131		E	1.0		DAY NAV-1:50	131
NAV	133	1.5		*	A	1	N*	117,132		E	1.0		UNAIDED NAV	132
											3.0			
CAL														
SCAL	140		2.0	*	S		D	116		E	0.5		CAL	140
CAL	141	1.5		*	A	1	D	116	R	E	0.5		DAY CAL	141
CAL	142	1.5		*	A	2	D	152,141		E	1.0		DAY SEC CAL	NEW
											2.0			
FORM														
SFORM	150		2.0	*	S		(NS)	140		E	0.5		DAY/NS FORM	150
FORM	151	1.5		*	A	2	D	141	R	E	1.0		DAY FORM CRUISE	151
FORM	152	1.5		*	A	2	D	151		E	1.0		DAY FORM PARADE	152
											2.5			
EXT														
SEXT	160		2.0	*	S		D	140		E	0.5		EXT	160
EXT	161	1.5		*	A	1	D	141		E	1.0		EXT	161
											1.5			
TERF														
TERF	171	1.5		*	A	1	D	022,116	R,MR	E	0.5		TERF	171
											0.5			
NS														
SNS	180		2.0	*	S		NS	031,107		E	0.5		SIM-NS FAM	118
NS	181	2.0		*	A	1	NS	031,NS LAB, 117	R	E	1.0		NS FAM	119
NS	182	1.5		*	A	1	NS	031,133,181		E	1.0		NS NAV	133
NS	183	1.5		*	A	1	NS	031,141,182		E	1.0		NS CAL	142
											3.5			
REV														
SREV	190		2.0	*	S		D	ALL PREVIOUS STAGES COMPLETE	R	E	1.0		SIM-REV	180
REV	191	1.5		*	A	1	D	190		E	1.0		REV	181
											2.0			
CSIX														
CSIX	192	1.5		*	A	1	D	041,191	R,MR	E	1.0		NATOPS	182
											1.0			
CRP TOTAL FOR PHASE											**35.0**			

CH-46 PILOT														
200 SERIES CORE SKILL BASIC														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
FAM/INST														
SFAM/INST	200		2.0	*	S/A	1	(N)				0.3		SFAM/INST	200
FAM/INST	201	2.0		180	A	1	(N)	200	R		0.5	200	FAM	202
FAM/INST	202	1.5		180	A	1	(N)	200	R		0.5	200	INST	202
											1.3			
CAL														
SCAL	210		2.0	*	S		D				0.3		SIM CALS	210
CAL	211	1.5		180	A	1	D	210			0.5	210	CALS	211
CAL	212	1.5		180	A	2	D	211	R		0.5	210,211	MULTI A/C CALS	212
											1.3			
EXT														
SEXT	220		2.0	*	S		D				0.3	210	SIM EXTERNALS	220
EXT	221	1.5		365	A	1	D	220,211	R		0.5	210,211,220	DAY EXTERNALS	221
											0.8			
FORM														
SFORM	230		2.0	*	S		D				0.3		SIM FORM	230
FORM	231	1.5		180	A	2	(NS)	230	R		0.5	230	TACFORM	231
											0.8			
TERF														
STERF	240		2.0	*	S		D				0.3		SIM TERF	240
TERF	241	1.5		180	A	1	D	240			0.5	240	TERF MANEUVERS	241
TERF	242	1.5		180	A	1	D	241			0.5	240,241	TERF	242
TERF	243	1.5		180	A	2	D	242	R		1.0	230,231,240,241,242	SEC TERF	243
											2.3			
NS														
SNS	250		2.0	*	S		NS				0.3	210	SIM NS FAM	250
NS	251	1.5		180	A	1	NS	250	R		0.5	210,211,250	HLL CALS	251
NS	252	1.5		180	A	2	NS	231,251			0.5	230,231,250	HLL FORM	252
NS	253	1.5		180	A	2	NS	212,252	R		1.0	210,211,212,230,231, 250,251,252	HLL SEC CALS	253
NS	254	1.5		*	A	3	NS	253			1.0	210,211,212,230,231, 250,251,252,253	HLL DIV CALS/FORM	254
NS	255	1.5		180	A	1	NS	TERFQ, 251			1.0	240,241,242,243,250	HLL TERF	255
NS	256	1.5		180	A	2	NS	TERFQ, 252,255			1.0	230,231,240,241,242, 243,250,252,255	HLL SEC TERF	256
NS	257	1.5		180	A	2	NS	253,256	R		1.2	210,211,212,230,231, 240,241,242,243,250, 251,252, 253,255,256	HLL SEC TERF/CALS	257
											6.5			

CH-46 PILOT														
200 SERIES CORE SKILL BASIC														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
AG														
AG	281	1.5		365	A	1	D		R		0.5		DAY AG	281
											0.5			
CQ														
SCQ	290		2.0	*	S		(N)	NONE			0.5		SIM D/N/ UNDAIDED CQ	290
CQ	291	1.0		365	A	1	D	290			0.5	290	DAY FCLP	291
CQ	293	1.0		365	A	1	NS	291			0.5	290, 291	NS FCLP	293
											1.5			
CRP TOTAL FOR PHASE											**15.0**			

CH-46 PILOT														
300 SERIES CORE SKILL ADVANCED														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
CQ														
CQ	300	1.0		365	A	1	D	291(If available)			0.7	210,211,290,291	DAY CQ	300
CQ	301	1.0		365	A	1	NS	293(If available), 300	R		1.0	210,211,250,251,290,291, 293,300,(310 LLL),(311 LLL)	NS CQ	301
											1.7			
NS														
SNS	310		2.0	*	S		NS	250			0.5	210,250	SIM LLL TERF/NAV/CALS	310
NS	311	1.5		180	A	1	NS	310	R		1.0	210,211,250,251,310	LLL CALS	311
NS	312	1.5		180	A	2	NS	311	R		1.0	210,211,212,250,251,252, 253,310,311	LLL SEC CALS	312
NS	313	1.5		180	A	3	NS	312	R		1.5	210,211,212,250,251,252, 253,254,310,311,312	LLL DIV CALS	313
NS	314	1.5		180	A	2	NS	313	R		1.5	210,211,212,230,231,240, 241,242,243,250,251,252, 253,255,256,257,310,311, 312	LLL TERF/FORM /CALS	314
											5.5			
AG														
AG	321	1.5		365	A	1	NS	281,251	R		0.7	281	NS AG	321
											0.7			
GTR														
SGTR	330		2.0	*	S		(NS)	230			0.5	230,240	SIM GRD THREAT REACT	330
GTR	331	1.5		365	A	2	(NS)	231,330, TERFQ	R		1.5	230,231,240,241,242,(250, 252),281,(310, 321)	NON-RADAR THREAT REACT	331
GTR	332	1.5		365	A	2	(NS)	231,330, TERFQ	R		1.5	230,231,240,241,242,(250, 252,310)	RADAR THREAT REAC	332
											3.5			
MAT														
SMAT	350		2.0	*	S		D	210			0.5	210	SIM MAT	350
MAT	351	1.5		365	A	1	D	211	R		0.7	210,211,350	DAY MAT	351
											1.2			
HIE														
SHIE	360		2.0	*	S		D				0.3	210	SIM HIE	360
HIE	361	1.0		365	A	1	D	211,221, 360	R		0.6	210,211,360	FASTROPE/ RAPPEL	361
HIE	362	1.0		*	A	1	NS	361			0.6	210,211,250,251,360,361, (310 LLL), (311 LLL)	NS FASTROPE/ RAPPEL	362
											1.5			

CH-46 PILOT														
300 SERIES CORE SKILL ADVANCED														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
TAC														
STAC	370		2.0	*	S		(NS)				0.5	210,230,(250 HLL),(310 LLL)	SIM D/N LOW THREAT	370
TAC	371	1.5		180	A	2	D	212,370, TERFQ			1.0	210,211,212,230,231,370	DAY LOW THREAT	371
TAC	372	1.5		180	A	2	NS	371,NSQ FOR APPT LL			1.1	210,211,212,230,231,250, 251,252,253,370,371,(310 LLL),(311 LLL),(312 LLL)	NS LOW THREAT	372
STAC	373		2.0	*	S	2	(NS)	370			0.5	210,230,(250 HLL),(310 LLL),370	SIM D/N MED THREAT	373
TAC	374	1.5		180	A	2	D	373			1.0	210,211,212,230,231,370, 371,373	DAY MED THREAT	374
TAC	375	1.5		180	A	2	NS	374	R		1.2	210,211,212,230,231,250, 251,252,253,370,371,372, 373,374,(310 LLL),(311 LLL),(312 LLL)	NS MED THREAT	375
											5.3			
EXT														
SEXT	390		2.0	*	S		(NS)	220,240, 250			0.1	210,220	SIM D/N TERF EXT	390
EXT	392	1.5		365	A	1	NS	221	R		0.5	210,211,220,221,250,251, 390,(310 LLL),(311 LLL)	NS EXT	392
											0.6			
CRP TOTAL FOR PHASE											20.0			

CH-46 PILOT														
400 SERIES CORE PLUS														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
TAC														
STAC	400		2.0	*	S		(NS)	STAC-373			0.2	210,230,240,330,370,373	SIM D/N HI THREAT	400
TAC	401	1.5		365	A	2	D	332,374, 400			0.4	210,211,212,230,231,240, 241,242,243,330,331,332, 370,371,373,374,400	DAY HI THREAT	401
TAC	402	1.5		365	A	2	NS	375,401, NSQ FOR APPT LL	R		0.4	210,211,212,230,231,240, 241,243,250,251,252, 253,255,256,257,330,331, 332,370,371,372,373,374, 375,400,401,(310 LLL), (311 LLL),(312 LLL),(314 LLL)	NS HI THREAT	402
											1.0			
CAL														
CAL	413	1.5		365	A	1	N*	201,211	R		0.3	210,211	UNAIDED CALS	213
											0.3			
EXT														
EXT	420	1.5		365	A	1	D	221,242	R		0.3	21O,211,220,221,240,241, 242,390	DAY TERF EXT	420
											0.3			
NBC														
SNBC	430		2.0	365	S		(NS)	210			0.2	210	SIM NBC	380
NBC	431	1.0		365	A	1	D	211,430	R		0.3	210,211,430	DAY NBC	430
NBC	432	1.0		*	A	1	NS	431, HLL NSQ			0.3	210,211,250,251,430,431, (310 LLL),(311 LLL)	NS NBC	431
											0.8			
DM														
SDM	440		2.0	*	S		D				0.2	230	SIM A-A DM	440
DM	441	1.5		365	A	2	D	231, TERFQ	R		0.3	230,231,440,442	RW DM	441
DM	442	1.5		365	A	2	D	231, TERFQ	R		0.3	230,231,440,441	FW DM	442
											0.8			
MAT														
MAT	450	1.5		365	A	2	D	212,351	R		0.3	210,211,212,350,351	DAY SEC MAT	450
MAT	451	1.5		365	A	1	NS	351, NSQ FOR APPT LL	R		0.3	210,211,250,251,350,351, (310 LLL),(311 LLL)	NS MAT	451
											0.6			

CH-46 PILOT														
400 SERIES CORE PLUS														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
HIE														
HIE	460	1.O		365	A	1	(NS)	221,(NS-392 FOR EVENTS CONDUCTED WITH NS	R		0.2	210,211,220,221	SPIE	460
HIE	461	1.0		365	A	1	(NS)	(NSQ FOR APPRT LL)	R		0.2		AERIAL DELIVERY	461
HIE	462	1.0		365	A	1	(NS)	(NSQ FOR APPRT LL)	R		0.2		HELOCAST/SOFTDUCK	462
HIE	463	1.0		365	A	1	(NS)	221(NSQ FOR APPT LL WITH NS)	R		0.2	210,211,220,221	HOIST OPS	463
											0.8			
CQ	490	1.0		365	A	1	N*	291			0.2	290,291	UNAIDED FCLP	292
CQ	491	1.0		365	A	1	N*	300,490(IF AVAILABLE)	R		0.2	210,211,290,291,300,413,490	UNAIDED CQ	491
											0.4			
CRP TOTAL FOR PHASE											5.0			

CH-46 PILOT 500 SERIES INSTRUCTOR														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
FAM														
FAM	500	1.5		*	A	1	D	005,006, 007,008, 009,010, 011,012		E	0.0	200,201	DAY INSTR TECH	500
FAM	501	1.5		*	A/S	1	D	500		E	0.0	200,201	DAY INSTR TECH	501
FAM	502	1.5		*	A/S	1	N*	501		E	0.0	200,201	NIGHT INSTR TECH	502
											0.0			
INST														
INST	503	1.5		*	A/S	1	D			E	0.0	200,202	INST INSTR TECH	503
INST	504	1.5		*	A/S	1	D	503		E	0.0	200,202	INST INSTR TECH	504
											0.0			
NAV														
NAV	505	1.5		*	A	1	D	021		E	0.0	210,211,350,351	NAV INSTR TECH	505
											0.0			
EXT														
EXT	506	1.5		*	A	1	D			E	0.0	210,211,220,221	EXT INSTR TECH	506
											0.0			
CAL														
CAL	507	1.5		*	A/S	1	D	022		E	0.0	210,211,240,241,242	CAL/TERF INSTR TECH	507
											0.0			
FAM														
FAM	508	1.5		*	A/S	1	D	008		E	0.0	200,201	FAM INSTR TECH	508
											0.0			
FORM														
FORM	509	1.5		*	A	1	D			E	0.0	230,231	FORM INSTR TECH	509
											0.0			
IUT														
IUT	511	3.0		*	A	1	D	041		E	0.0		STAN CHECK	511
											0.0			
NS														
NS	513	1.5		*	A	1	NS	031		E	0.0	250,251	HLL NS INSTR TECH	513
											0.0			
NSI														
NSI	550	1.5		*	A	1	NS			E	0.0	200,201,210,211	NS SS WORK	550
NSI	551	1.5		*	A	1	NS			E	0.0	201,202,203,210,211,250, 251,310,311	LLL CALS/NAV	551
NSI	552	1.5		*	A	1	NS			E	0.0	201,202,203,210,211,250, 251,310,311	LLL CALS/ NAV INSTR TECH	552
											0.0			

CH-46 PILOT														
500 SERIES INSTRUCTOR														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
NSFI														
NSFI	560	1.5		*	A	1	NS			E	0.0	200,201	HLL SS WORK	560
NSFI	561	1.5		*	A	1	NS			E	0.0	200,201,210,211,250,251	HLL CAL/NAV	561
NSFI	562	1.5		*	A	1	NS			E	0.0	200,201,210,211,250,251	HLL INSTR TECH	562
											0.0			
TERF														
TERFI	570	1.5		*	A	1	D			E	0.0	220,221,240,241,242,390,420	DAY TERF MAN INSTR TECH	570
TERFI	571	1.5		*	A	2	D			E	0.0	230,231,240,241,242,243	DAY TERF NAV INSTR TECH	571
TERFI	572	1.5		*	A	2	D			E	0.0	230,231,240,241,242,243	TERFI CHECK	572
											0.0			
DM														
DMI	581	1.5		*	A	2	D			E	0.0	230,231,240,241	RW/FW DM INSTR TECH	581
DMI	582	1.5		*	A	2	D			E	0.0	230,231,240,241	RW/FW DMI CHECK	582
											0.0			
NSI														
NSI	590	1.5		*	A	1	NS			E	0.0	200,201,210,211,250,251, 290,291,293,(310 LLL),(311 LLL)	NS INSTR TECH	590
NSI	591	1.5		*	A	1	NS			E	0.0	200,201,210,211,220,221, 250,251,390,392,(310 LLL),(311 LLL)	NS LOW WORK INSTR TECH	591
NSI	592	1.5		*	A	2	NS			E	0.0	200,201,210,211,212,250, 251,252,253,(310 LLL),(311 LLL),(312 LLL),(314 LLL)	NS FORM/NAV/ CAL INSTR TECH	592
NSI	593	1.5		*	A	2	NS			E	0.0	200,201,210, 211,212,240, 241,242,243,250,251,252, 253,255,256,257,(310 LLL),(311 LLL),(312 LLL),(314 LLL)	NS SEC TERF INSTR TECH	593
NSI	594	1.5		*	A	1	NS			E	0.0	200,201,210,211,220,221, 250,251,290,291,293,311, 390,392	LLL NSI CHECK	594
NSI	595	1.5		*	A	2	NS			E	0.0	200,201,210,211,212,230, 231,240,241,242,243,250, 251,252,253,255,256,257, 310,311,312,314	LLL SEC NSI CHECK	595
											0.0			
CRP TOTAL FOR PHASE											**0.0**			

CH-46 PILOT														
600 SERIES REQUIREMENTS,QUALIFICATIONS,DESIGNATIONS														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
RQD														
RQD	600	1.5		365	A/S	1	(N)	QUALIFIED H2P		E	0.0	200,201	NATOPS CHECK	600
RQD	601		1.5	365	S/A	1	(N)	PER OPNAV 3710.7		E	0.0	200,202	INSTR CHECK	601
											0.0			
FL														
FL	602	1.5		*	A	1	D	PER NATOPS, SQUADRON SOP		E	0.0		HAC REV	602
FL	603	1.5		*	A	1	N	NSQ, PER NATOPS, SQUADRON SOP		E	0.0		NIGHT HAC REV	603
FL	604	1.5		*	A	1	D	PER NATOPS, SQUADRON SOP,602, 603		E	0.0		DAY HAC CHECK	604
FL	605	1.5		*	A	1	N	PER NATOPS, SQUADRON SOP,602, 603		E	0.0		NIGHT HAC CHECK	605
FL	606	1.5		*	A	2	D	371, DESIGNATED HAC,		E	0.0		DAY SEC REV	606
FL	607	1.5		*	A	2	N	372, DESIGNATED HAC		E	0.0		NIGHT SEC REV	607
FL	608	1.5		*	A	2	(N)	606,607	R	E	0.0		SEC CHECK	608
FL	609	1.5		*	A	3	D	608		E	0.0		DAY DIV REV	609
FL	610	1.5		*	A	3	N	608		E	0.0		NIGHT DIV REV	610
FL	611	1.5		*	A	3	(N)	609,610	R	E	0.0		DIV CHECK	611
FL	612	1.5		*	A	5	(N)	375,611	R	E	0.0		FLT LDR CHK/REV	612
FL	613	1.5		*			(N)	402,612	R	E	0.0		AMC CHK/ REV	613
											0.0			
SPECIAL TRAINING														
SSPEC TRNG	620		2.0	*	S	1	(N)	210			0.0			620
AWT	621	2.0		*	A	1	(N)	211			0.0		ARCTIC WTHR TRNG	620
DES	622	2.0		*	A	1	(N)	211			0.0		DES OPS	630
WTR	623	1.0		*	A	1	D	211			0.0		WTR LANDINGS	650
SACM	624		2.0	*	S		D	DMQ			0.0		SIM ACM	660
											0.0			
FCF														
FCF	630	2.0		*	A	1	D	SQUADRON FCF SYLLABUS AND READING	R	E	0.0		FCF	670
											0.0			
SCRM														
SCRM	640	1.5		365	A/S	1	(N)	COMPLETION OF THE CH-46E CRM COURSE	R	E	0.0		SIM/AC CRM	640
											0.0			
CRP TOTAL FOR PHASE											**0.0**			

CH-46 PILOT														
600 SERIES REQUIREMENTS,QUALIFICATIONS,DESIGNATIONS														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INT	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	OLD CODE
QUAL														
QUAL	650										0.0		TERF QUAL	
QUAL	651										0.0		HLL QUAL	
QUAL	653										0.0		CQ QUAL	
QUAL	654										0.0		NSQ LLL	
QUAL	655										0.0		DM QUAL	
QUAL	657												FRS TERFQ	
QUAL	658												FRS NSQ	
											0.0			
INST DESIG														
IDESIG	660										0.0		TERFI	
IDESIG	661										0.0		DMI	
IDESIG	662										0.0		NSFI	
IDESIG	663										0.0		NSI	
IDESIG	666										0.0		WTI	
IDESIG	667										0.0		NSI	
IDESIG	668										0.0		FRSI	
IDESIG	670										0.0		SEC LDR	
IDESIG	671										0.0		DIV LDR	
IDESIG	672										0.0		FLT LEADER	
IDESIG	673										0.0		AMC	
IDESIG	674										0.0		FCP	
											0.0			
CRP TOTAL FOR PHASE											**0.0**			

CHAPTER 2

CH-46E CREW CHIEF/AERIAL GUNNER/OBSERVER

CHAPTER 2

CH-46E CREW CHIEF/AERIAL GUNNER/OBSERVER

200. MARINE MEDIUM HELOCOPTER SQUADRON (CH-46E) UNIT CORE COMPETENCY. Marine Aviation plays a crucial role in the MAGTF's ability to conduct Maneuver Warfare. The ultimate goal of Marine Aviation is to attain the highest possible combat readiness to support Expeditionary Maneuver Warfare while at the same time preserving and conserving our Marines and equipment. Embedded within our combat readiness is the ability to rapidly, effectively, and efficiently deploy on short notice and the ability to quickly and effectively plan for crises and/or contingency operations thereby ensuring Marine Aviation remains ready for combat when and where the need arises. The CH-46E T&R Manual represents the collaborative effort of CH-46E Subject Matter Experts who designed training standards to maximize the full combat capabilities of the CH-46E and its crew. These standards, intrinsic in the core competency section, describe and define unit capabilities and requirements necessary to maintain like-squadron proficiency in core skills and combat leadership. Training events are based on specific requirements and performance standards to ensure aircrew maintain a common base of training and depth of combat capabilities. Together, the T&R comprises a building block approach to ensure that trained aircrews remain ready, relevant, and fully capable of supporting the MAGTF commander.

1. Mission. Support the MAGTF Commander by providing assault support transport of combat troops, supplies and equipment, day or night under all weather conditions during expeditionary, joint or combined operations.

2. Mission Essential Task List (METL)

a. (UJTL TA 1.1.2) Conduct Shipboard Deck helicopter Landing Qualifications

b. (UJTL TA 1.1.4) Conduct Sea and Air Deployment Operations

(1) Maintain the capability to deploy and operate from advanced bases, expeditionary airfields, Forward Operating Bases (FOBs), and naval shipping.

(2) Perform organizational maintenance on assigned aircraft.

c. (UJTL TA 1.2.1) Conduct Air Assault Operations and Air Assault

(1) Provide assault support transport of combat troops.

(2) Provide support for casualty evacuation operations.

(3) Maintain self-defense capability from ground-to-air and air-to-air threats.

d. (UJTL TA 1.2.3) Conduct Amphibious Assault and Raid Operations

(1) Conduct assault support for maritime special operations.

e. (UJTL TA 4.2) Distribute Supplies and Provide Transport Service

(1) Conduct aerial re-supply.

(2) Provide support for mobile Forward Arming and Refueling Points (FARPS).

f. (UJTL TA 6.2) Conduct Joint Personnel Recovery

(1) Conduct Tactical Recovery of Aircraft and Personnel (TRAP) operations.

(2) Augment local Search and Rescue (SAR) assets.

g. (UJTL TA 6.4) Conduct Noncombatant Evacuation

(1) Provide support for evacuation operations.

3. Table of Organization. Refer to Table of Organization 8940 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for CH-46 units. As of this publication date, CH-46 units are authorized:

Squadron
12 aircraft
28 Pilots/19 Crew Chiefs/19 Aerial Gunner/Observers

4. Core Capability. A core capable squadron is able to sustain 20 sorties on a daily basis during contingency/combat operations. The above sortie rates are based on 1.5 hour average sortie duration and assumes > 70 percent FMC aircraft and > 90 percent T/O aircrew. If unit FMC aircraft < 70 percent or assigned crew < 90 percent T/O, core capability will be degraded by a like percentage. A core capable squadron is able to accomplish all tasks designated in the unit METL from a main base, expeditionary base, and/or carrier/amphibious platform (as appropriate per aircraft/system).

5. METL/Core Skill Matrix. CH-46 core skills directly support the METL as follows:

METL	FAM/ INST	CAL	EXT	FORM	TERF	NS HLL	NS LLL
a. Conduct Shipboard Deck helicopter Landing qualifications	X					X	X
b. Conduct Sea and Air Deployment Operations	X	X	X	X	X	X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X	X	X	X
f. Conduct Joint Personnel Recovery	X	X		X	X	X	X
g. Conduct Noncombatant Evacuation	X	X		X	X	X	X

METL	AG	GTR	MAT	HIE	TAC	CQ
a. Conduct Shipboard Deck helicopter Landing qualifications						X
b. Conduct Sea and Air Deployment Operations	X	X	X		X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X		X	X
f. Conduct Joint Personnel Recovery	X	X	X	X	X	X
g. Conduct Noncombatant Evacuation	X		X		X	X

METL	SFAM	*TAC	*CAL	*EXT	*NBC	*DM	*MAT	*HIE	*TG	*CQ
a. Conduct Shipboard Deck helicopter Landing qualifications	X									X
b. Conduct Sea and Air Deployment Operations	X	X	X	X	X	X	X		X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X	X	X	X	X	X	X
f. Conduct Joint Personnel Recovery	X	X	X			X	X	X	X	X
g. Conduct Noncombatant Evacuation	X	X	X			X	X		X	X
* Core Plus Skill										

6. Core Model Minimum Requirements (CMMR). CMMR is measured in terms of the minimum number of Core Skill Proficiency (CSP) crews and minimum numbers of combat leaders per paragraphs a. and b. below:

a. Minimum Unit CSP Requirements. As a minimum, in order to be considered Core Competent, a unit must possess the following numbers of crews who are proficient in each core skill (Unit CSP):

CH-46E CMMR (Unit CSP Requirements)				
CORE SKILL	SQDN Pilots	SQDN Crew Chiefs	SQDN AG/O	SQDN Crews
FAM/INST	16	8	8	8
CAL	16	8	8	8
EXT	12	6	6	6
FORM	16	8	8	8
TERF	16	8	8	8
NS HLL	16	8	8	8
NS LLL	16	8	8	8
AG	16	8	8	8
GTR	12	6	6	6
MAT	12	6	6	6
HIE	12	6	6	6
TAC	12	6	6	6
CQ	12	6	6	6

CH-46E CMMR (Unit CSP Requirements)				
CORE PLUS SKILL	SQDN Pilots	SQDN Crew Chiefs	SQDN AG/O	SQDN Crews
SFAM	-	6	-	6
TAC	12	6	6	6
CAL	12	6	6	6
EXT	12	6	6	6
NBC	12	6	6	6
DM	12	6	6	6
MAT	12	6	6	6
HIE	12	6	6	6
TG	-	6	-	6
CQ	12	6	6	6

b. A standard CH-46 crew consists of 2 pilots, 1 crew chief, and an AG/O. A CSP crew consists of individuals representing each crew position who have achieved and maintain individual CSP. In order to be considered proficient in a core skill, a crewmember must attain and maintain proficiency in core skill events as delineated in paragraphs (1) and (2) below.
* Proficiency in Core Plus Skills is not required to obtain unit CSP

(1) Events Required to Attain Individual CSP. To initially attain CSP in a core skill, an individual must simultaneously have a 'proficient' status in all of the Core (200-300) T&R events listed in the table below for that core skill:

Individual CSP Attain Table						
Crew Chief/AGO	FAM/ INST	CAL	EXT	FORM	TERF	NS HLL
T&R event requirements to attain CSP	201R	211 212R	221R 392R	231R	241 242 243R	251R 252 253R 254 255 256 257R
R = Refresher POI event						

Individual CSP Attain Table								
Crew Chief/AGO	AG	CQ	NS LLL	GTR	MAT	HIE	TAC	
T&R event requirements to attain CSP	280 281 282R 283R 320R 321 322R	291 293 300 301R	311R 312R 313R 314R	331R 332R	351R	361R 362	371 372R 374 375R	
R = Refresher POI event S = Event conducted in simulator								

(2) Events Required to Maintain Individual CSP. To maintain CSP in a core skill, an individual must maintain proficiency in all of the Core (200-300) T&R events listed in the table below for that core skill.

Individual CSP Maintain Table							
Crew Chief/AGO	FAM/ INST	CAL	EXT	FORM	TERF	NS HLL	NS LLL
T&R event requirements to maintain CSP	201R	212R	221R 392R	231R	243R	257R	313R 314R
R = Refresher POI event							

Crew Chief/AGO	AG	GTR	MAT	HIE	TAC	CQ
T&R event requirements to maintain CSP	282R 283R 322R	331R 332R	351R	361R	375R	301R

(3) Events Required to Attain Individual Proficiency in Core Plus Skills. Proficiency in core plus skills is not required to obtain unit CSP. Training to core plus skills is at the discretion of the unit commanding officer. To initially attain proficiency in a core plus skill, an individual must simultaneously have a 'proficient' status in all of the T&R events listed in the table below for that core plus skill:

Individual Core Plus Skills Attain Table										
CH-46 Crew Chief/AGO	TAC	CAL	EXT	NBC	DM	MAT	HIE	SFAM	TG	CQ
T&R event requirements to attain competency	401 402R	413R	420R	431R 432	441R 442R	450 451R	460R 461R 462R 463R	470	481R 482R	490 491R

(4) Events Required to Maintain Individual Proficiency in Core Plus Skills. To maintain proficiency in a core plus skill, an individual must maintain proficiency in all of the T&R events listed in the table below for that core plus skill:

Individual Core Plus Skills Maintain Table										
CH-46 Crew Chief/AGO	TAC	CAL	EXT	NBC	DM	MAT	HIE	SFAM	TG	CQ
T&R event requirements to attain competency	402R	413R	420R	431R	441R 442R	451R	460R 461R 462R 463R	470R	481R 482R	491R

7. Qualifications, Designations, and Instructor Requirements Tables. The tables below delineate T&R events required to be completed to attain initial qualifications, to re-qualify, and to attain designations. All stage lectures, briefs, squadron training and prerequisites shall be complete prior to completing final events. Qualification and designation letters signed by the commanding officer shall be placed in individual NATOPS and APR/MPR jackets. Loss of proficiency in all qualification events causes the associated qualification to be lost. Regaining a qualification requires completing all R coded syllabus events associated with that qualification. Designations are command specific. Therefore, if the crew chief/AGO has not had PCS or PCA orders since previous designation letter, no additional designation letter is required. Follow-on commands shall repeat “initial documentation procedure.”

Qualification (TRACKING CODE)	Initial Event Qualification Requirements
NATOPS (600E)	IAW OPNAVINST 3710.7.
CRM (640E)	IAW OPNAVINST 1542.7
TERF (650)	241, 242, 243
NSQ HLL (651)	251, 252, 253, 254, 255, 256, 257
AG (EAC) (652)	281,282,283,321,322
CQ (653)	300, 301
NSQ LLL (654)	311, 312, 313, 314
DM (655)	441, 442
TG (EAC) (656)	481,482
FRS TERFQ	241
FRS NSQ	251

Designation (TRACKING CODE)	Designation Requirements
TERFI (660)	IAW MAWTS-1 Course Catalog
DMI (661)	IAW MAWTS-1 Course Catalog
NSFI (662)	IAW MAWTS-1 Course Catalog
NSI (663)	IAW MAWTS-1 Course Catalog
AGI (664)	IAW MAWTS-1 Course Catalog
TGI (665)	IAW MAWTS-1 Course Catalog
WTI (666)	IAW MAWTS-1 Course Catalog
NSSI (667)	IAW MAWTS-1 Course Catalog
FRSCCI (668)	500,501,502,503,504,505, 506
FCF (674)	IAM OPNAVINST 4790 AND COMMAND SPECIFIC DIRECTED 630E

8. Enlisted Instructor Qualifications. As a minimum, for a squadron to be considered Core Competent, it must possess the following numbers of aircrew in the listed instructor categories. (Note: If the squadron is < T/O, required numbers are reduced by a like %).

INSTRUCTOR DESIGNATION	Pilots	C/C
TERFI	6	6
DMI	2	2
NSI	4	4
WTI	2*	2**
AGI	N/A	4+
TGI	N/A	2

*One shall be assigned as the squadron WTI.
**One shall be assigned in Operations as the squadron enlisted WTI.
+AG/O's holding AGI designation cannot be included in this number.

201. PROGRAMS OF INSTRUCTION (POI) FOR BASIC CREW CHIEF. Transition and Conversion crew chiefs will fly the basic POI.

WEEKS	COURSE/PHASE	ACTIVITY
1-22	Core Skill Introduction	FRS
23-29	Core Skill Basic	Tactical Squadron
30-38	Core Skill Advanced	Tactical Squadron
39-48	Core Plus	Tactical Squadron

202. POI FOR BASIC AERIAL GUNNER/OBSERVER. Transition and Conversion Aerial Gunner/Observers will fly the basic POI.

WEEKS	COURSE/PHASE	ACTIVITY
1-16	Core Skill Basic	Tactical Squadron
17-20	Core Skill Advanced	Tactical Squadron
21-24	Core Plus	Tactical Squadron

203. POI FOR REFRESHER CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
0	Core Skill Introduction	Tactical Squadron
1-10	Core Skill Basic	Tactical Squadron
11-18	Core Skill Advanced	Tactical Squadron
19-26	Core Plus	Tactical Squadron

204. POI FOR REFRESHER AERIAL GUNNER/OBSERVER

WEEKS	COURSE/PHASE	ACTIVITY
1-13	Core Skill Basic	Tactical Squadron
14-18	Core Skill Advanced	Tactical Squadron
19-22	Core Plus	Tactical Squadron

210. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION. Utilize academic courseware as outline in the Computer Based Training (CBT) program and the Chapter 6 and 9 of the MAWTS-1 Course Catalog.

230. EVENT PERFORMANCE REQUIREMENTS

1. General

a. The following conditions apply:

(1) D = Shall be flown during the day

(2) N = Shall be flown at night (utilizing available night vision devices or flown unaided)

(3) (N) = May be flown day or night; if flown at night, available night vision devices may be utilized or flown unaided

(4) NS = Shall be flown at night utilizing available night vision devices

(5) (NS) = May be flown day or night; if flown at night, available night vision devices shall be utilized

(6) N* = Event shall be flown at night unaided

(7) (N*) = Event may be flown at night; if flown at night, shall be flown unaided

b. Waived/Deferred events. Commanding officers may waive or defer events per the Aviation T&R Manual. If the commanding officer has waived/deferred a syllabus event, the enlisted WTI must place a waiver/deferal letter in section 3 of the APR.

c. Designation as Aerial Gunner/Observer. After being qualified NSQ LLL, AG and completion of RQD-600 an AGOUI may be designated an Aerial Gunner/Observer by the commanding officer. A qualification letter, signed by the commanding officer is required. The original shall be placed in the AGO’s NATOPS jacket, and a copy in his APR with a corresponding logbook entry.

d. Aerial Gunnery Simulator Training. Although a current simulator does not exist, a request for an Aerial Gunner simulator has been forwarded. The

commanding officer may waive AG simulator codes until a simulator becomes available.

e. Aircraft And Simulator Codes. These codes are assigned to delineate whether the event uses a simulator or an airframe. The codes are located in the event header following the POI codes. A= aircraft, S= simulator, A/S= aircraft preferred/simulator optional, S/A= simulator preferred/aircraft optional. Until an aircraft simulator becomes operational, unit commanders may waive appropriate syllabus events per paragraph 306 of the Aviation Program Manual.

2. Evaluation Sorties. These events shall be flown with an experienced aerial gunner instructor or crew chief instructor designated for the specific flight instruction required.

a. A designated NATOPS Instructor/Assistant NATOPS Instructor shall evaluate RQD-600 for both the crew chief and aerial gunner/observer. AGOUI shall fly RQD-600 prior to being designated an aerial gunner/observer and after being qualified NSQ LLL and AG qualified.

b. A crew chief instructor proficient in a given event shall evaluate any initial event required for a Basic, Conversion, Transition, or Refresher crew chief or aerial gunner/observer. A qualified and designated crew chief instructor or AGI will complete an ATF. Pilots and observers will not sign off crew chief ATFs with the exception of initial SFAM-470.

c. All flights annotated with an E shall be evaluated per T&R Program Manual.

d. The Enlisted WTI shall ensure all Aircrew Training Forms (ATFs) are entered in section 3 of the APR for all initial events flown. These ATFs shall remain until a more current ATF replaces it.

e. Refresher aircrews shall have ATFs entered in section 3 of the APR for all flights designated by an R in the flight description. These ATFs will replace ATFs previously entered in section 3.

f. All 200-600 level ATFs will be developed and maintained by the Syllabus Sponsor. Updated ATFs will be disseminated in conjunction with publication of Interim Approved T&Rs.

3. Syllabus Assignment

a. Basic, Conversion and Transition crew chiefs will be assigned to fly the entire syllabus. Refresher crew chiefs will fly those flights designated by an ‘R’ in the T&R matrix in paragraph 170. Basic, Conversion and Transition aerial gunner/observers will fly the same syllabus as the respective crew chief except as noted in the crew requirements for each stage as listed in paragraph 170. AGOs training to become Secondary MOS Crew Chiefs shall fly those events designated by an ‘O’ in the T&R matrix in paragraph 170.

b. Refresher Syllabus. Aircrew who have been previously assigned to the Basic POI, but are not proficient shall be assigned to fly the Refresher POI per the Aviation T&R Program Manual. The Refresher syllabus is predicated on the experience of the Refresher crew chief or aerial gunner/observer. A Refresher crew chief or aerial gunner/observer need not fly every event within a stage of training to be re-qualified in that stage. A crew chief or aerial gunner/observer in the Refresher syllabus should fly all R coded

events. The commanding officer may tailor the Refresher syllabus to fit the experience of the Refresher crew chief or aerial gunner/observer per the T&R Program Manual. When the R coded events within a stage of training are complete, the crew chief or aerial gunner/observer may be credited with the CRP for the entire stage of training. This assumes that the Refresher has previous proficiency in that stage of training. If the Refresher crew chief or aerial gunner/observer has no previous proficiency in a stage or particular event, then the Refresher shall fly the entire stage or all events not previously flown.

c. Secondary MOS Crew Chief. All efforts shall be made with MMEA-84 to receive assignment of Primary MOS crew chiefs prior to utilizing secondary AMOS program. If inventory shortages cannot be filled through MMEA-84, authorization is granted to individual unit COs to train secondary AMOS 6172 under the following Guidelines:

(1) The number of secondary MOS crew chiefs that an individual unit Commander may train is limited to the current staffing formula; 1.6 CC x primary assigned aircraft (PAA) = number of crew chiefs minus primary/additional MOS crew chiefs on hand. For example, if a squadron has 14 primary/additional MOS crew chiefs assigned, and the staffing formula computes to 19 total crew chiefs, unit commanders may only request to train a maximum of 5 secondary AMOS crew chiefs to equal PAA.

(2) To ensure standardization of training and aviation adaptability, all requested trainees shall be designated an aerial gunner/observer prior to starting secondary AMOS training.

(3) The source population shall be restricted to aviation maintenance MOS of 611x, 615x, and 632x only. All requests shall be submitted via DMS format to CGG TECOM ATB (C4610) for approval prior to trainee starting flight syllabus. MSG shall include:

(a) Organization requesting training of secondary AMOS crew chief.

(b) Name, rank, MOS, and SSN of trainee.

(c) Total number of crew chiefs rated by PAA.

(d) Total number of primary and secondary AMOS crew chiefs assigned to requesting MCC.

(e) Adequate justification for training a secondary AMOS crew chief.

(f) Faxed copy of initial AGO NATOPS evaluation report (OPNAV 3710/7 form).

(4) Upon receipt of request, ATB will approve/disapprove request via ASL/ASM and notify requesting command through DMS format. Approved training will be conducted in strict compliance with this manual and MCO P1200.7, Military Occupational Specialties Manual. Additional requirements are outlined below:

(a) To ensure MOS standardization all core skill introduction (100 Level series) codes shall be flown with a current Enlisted Weapons and Tactics Instructor (MOS 6177) or NATOPS Evaluator/Instructor holding a

primary MOS of 6172. Only a currently assigned and designated FRS crew chief instructor (CCI) shall administer the core skill introduction evaluation flight (CSIX 192).

(b) The Total Time to Train (TTT) secondary AMOS crew chiefs shall not exceed six months. The date of initial flight and completion of evaluation flight define the TTT.

(c) Core Skill Basic, Advanced and Plus flights previously flown as an Aerial Gunner/Observer shall not transfer to the training of the secondary AMOS crew chief. All flights must be flown with CCUI acting in the capacity of a crew chief.

(5) Only the FRS COs have the authority to designate the secondary AMOS of 6172. The evaluation flight may be flown at the respective FRS or individual requesting squadron. Requesting commands shall coordinate with FRS for scheduling of the evaluation flight. TAD funding for either the trainee or FRS CC instructor shall be the responsibility of the requesting squadron.

(6) The FRS CCI shall administer the oral and Core Skill Introduction evaluation flight and closed book NATOPS examination. Prior to core skill introduction evaluation flight parent commands shall ensure:

(a) Nominees complete squadron approved open book NATOPS examination.

(b) Nominees are designated a plane captain by unit CO.

(c) Prior to designation, nominees shall attend SERE training.

(7) Upon completion of core skill introduction evaluation flight, copies of all certifications and evaluations shall be submitted to respective FRS COs for secondary AMOS certification/approval. Documents to be submitted are:

(a) Copy of current flight physical.

(b) Copy of physiology/water survival Form 3760/32.

(c) Copy of all crew chief 100 series ATFs.

(d) Copy of current flight orders.

(e) Copy of section III(c), examination record, OPNAV 3760/32G.

(f) Copy of current plane captain designation.

(g) Copy of initial AGO evaluation form, OPNAV 3710/7.

(h) Original crew chief evaluation form, OPNAV 3710/7.

(i) Copy of SERE completion certificate.

(j) Marines listed as instructor on 100 series ATFs must submit a copy of respective WTI certificate or NATOPS Evaluator/Instructor designation. The primary purpose of this documentation is to assist the

model manager in tracking the certification process and identifies positive/negative trends in the training process. Evaluation standards applicable to primary MOS crew chiefs shall be strictly adhered to.

(8) The FRS CCI shall forward original OPNAV 3710/7 form to FRS CO for approval. The FRS CO shall sign the NATOPS evaluation and a crew chief designation letter and forward to the originating command for insertion into trainees NATOPS jacket.

(9) In order to facilitate management of the MOS end strengths, secondary AMOS crew chiefs desiring a primary 6172 MOS, will forward the appropriate AA form to MMEA-6 requesting a lateral move from a secondary AMOS crew chief to a primary MOS crew chief.

(10) On hand primary designated MOS crew chiefs shall have priority for crewmember flight orders IAW MCO1326.2G.

(11) This policy applies to Marines currently in training and is effective immediately. This is not applicable to Marines designated prior to this revision, or Marines currently assigned to the Executive Flight Detachment of HMX-1.

4. Refly Interval. Paragraph 170 shows refly interval and CRP for all events.

5. Crew Resource Management (CRM). CRM shall be briefed for all flights and/or events.

6. Definitions

a. Demonstrate. The description and performance of a particular procedure by the instructor, observed by the CCUI. The CCUI is responsible for knowledge of the procedures prior to the demonstration.

b. Discuss. An explanation of systems or procedures during the brief, in flight, or post flight.

c. Evaluate. Any flight designed to evaluate aircrew standardization.

d. Introduce. The instructor may demonstrate a procedure to a student, or may coach the CCUI through the procedure without demonstration. The CCUI performs the procedures with coaching as necessary. The CCUI is responsible for knowledge of the procedures.

e. Review. Demonstrated proficiency by the CCUI.

231. CORE SKILL INTRODUCTION PHASE

1. Familiarization (FAM)

a. Purpose. To develop preliminary skills as a crew chief in the CH-46E and become familiar with flight characteristics, aircraft systems, limitations, and emergency procedures. To develop proficiency in assisting pilots in all aspects of FAM flight, both day and night.

b. General

(1) These flights may be flown with any flight of the basic pilot POI.

(2) The newly designated crew chief assigned to the FRS may fly a TERF-241 with a CCI and receive a FRS TERFQ only when determined proficient by the CCI. This qualification will allow the crew chief to fly only with a Pilot Under Instruction (PUI) during a TERF-171.

(3) The newly designated crew chief assigned to the FRS may fly a NS-251 with a CCI and receive a FRS NSQ only when determined proficient by the CCI. This qualification will allow the crew chief to fly only with a PUI during a NS-181, NS-182, and NS-183.

(4) On FAM-109 the CCUI will act as an observer. Subsequent to FAM-109 the CCUI will act in the capacity of crew chief.

(5) The CH-46E FRS shall develop the standardization of introductory flight maneuvers, classroom materials and procedures for instructional/student training and maintain the Core Skill Introduction Phase syllabus for the CH-46E T&R.

c. Crew Requirement. CCI/CCUI.

d. Ground/Academic Training. Prior to FAM-110, Aviation Physiology and flight physical, swim qualifications, and applicable ground training must be completed.

e. Flight Training. (4 Flights, 6.5 Hours).

FAM-109 2.0 O 1 CH-46E A

Goal. Introduce ground and normal flight procedures.

Requirement

Discuss:
- Use of ICS.
- Standard terminology.
- Voice procedures.
- Interaction with pilots.
- Lookout doctrine.
- Estimating distances.
- Emergency procedures.
- Fuel surveillance.
- Crew comfort levels.
- Vertigo.
- Takeoff and landing emergencies.
- CRM.
  - Communication.
  - SA.

Introduce:
- Basic crew duties.
- Daily/turnaround inspections.
- Servicing requirements.
- Startup/shutdown procedures.
- Hotseat procedures.
- Takeoff.
- Operation of communications equipment.
- Inflight lookout.
- Headwork.
- Aft station check procedures.

Aircraft fueling procedures.
Crew comfort levels.
Depth perception.
Taxiing/directing procedures.
Back taxi procedures.
Hot fuel procedures.

Review:
Limitations.
SOPs.
Crew chief duties.
Startup/shutdown procedures.
Aircraft security: Ship/shore based procedures.
Daily/Turnaround inspections.
Hotseat procedures.

Performance Standards. Exhibit basic understanding of crewchief duties.

Prerequisite. CRM and completion of plane captain oral sign-offs.

FAM-110 2.0 O 1 CH-46E A

Goal. Introduce communications, passenger briefing, normal and emergency procedures.

Requirement

Discuss:
Standard terminology.
Interaction with pilots.
Takeoff and landing emergencies.
Engine limitations.
Transmission limitations.
Inflight fire.
Smoke elimination.
CRM.
SA.
Leadership.
Ditching procedures.

Introduce:
Precautionary landings.
Emergency landings.
Autorotations.
SA.
Ground handling procedures.
Crew chief responsibilities during loading.
T&R Program Manual.
Aft station check procedures.

Review:
ICS usage.
Taxi procedures.
AFT station check procedures.
Hot fuel procedures.

Performance Standards. Demonstrate application of crew chief duties.

Prerequisite. FAM-109.

FAM-111 2.0 O 1 CH-46E A

Goal. Introduce communications, passenger briefing, normal and emergency procedures.

Requirement

Discuss:
- Standard terminology.
- Interaction with pilots.
- Takeoff and landing emergencies.
- Engine limitations.
- Transmission limitations.
- Inflight fire.
- Smoke elimination.
- CRM.
  - SA.
  - Leadership.
- Ditching procedures.

Introduce:
- Precautionary landings.
- Emergency landings.
- Autorotations.
- SA.
- Ground handling procedures.
- Crew chief responsibilities during loading.
- T&R Program Manual.
- Aft station check procedures.
- Introduce MCO P3500.14
- Introduce MCO P3500.50 chapter 2

Review:
- ICS usage.
- Taxi procedures.
- AFT station check procedures.
- Hot fuel procedures.

Performance Standards. Demonstrate application of crew chief duties.

Prerequisite. FAM-110.

FAM-116 1.5 O 1 CH-46E A

Goal. Introduce communications, aircraft procedures, normal and emergency procedures.

Requirement

Discuss:
- Standard terminology.
- Use of ICS.
- Interaction with pilots.
- Takeoff and landing emergencies.
- Engine limitations.
- Transmission limitations.

Inflight fire.
Smoke elimination.
CRM.
Aft station check procedures.
Aircraft fueling procedures.

Introduce:
Daily/Turnaround inspections.
Blade fold/unfold procedures.
APU start-up/shut-down procedures.
Aircraft power checks.

Review:
ICS usage.
Taxi procedures.
AFT station check procedures.
Hot fuel procedures.
Standard terminology.
Emergency procedures.
Basic crew duties.
Aircraft limitations.

Performance Standards. Demonstrate application of crew chief duties.

Prerequisite. FAM-111.

FAM-117 1.5 O 1 CH-46E A N*

Goal. Introduce night operations.

Requirement

Discuss:
Lighting systems.
Night operations.
Estimating distances.
CRM.
Adaptability/flexibility.
Decision making.

Introduce:
Daily at night.
Turnaround at night.
Light discipline.
Aircraft lighting.
Airfield lighting.
Night lookout doctrine.

Review:
Night precautionary Landings.
Night emergency landings.
Overview of duties.
SA.
Night startup/shutdown procedures.
Limitations.
Hot seat procedures.

Performance Standards. Demonstrate a basic knowledge of night operations IAW NATOPS.

Prerequisite. FAM-116.

2. Navigation (NAV)

a. Purpose. To familiarize the CCUI with navigation responsibilities while navigating primarily using charts and maps.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist the pilots in all aspects of navigation.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS Navigation class.

e. Flight Training. (2 Flights, 3.0 Hours).

NAV-131 1.5 O 1 CH-46E A (N)

Goal. Introduce flight duties during navigation.

Requirement

Discuss:
- Fuel management checks.
- Crew participation.
- CRM.
  - Communication.
  - Decision making.

Introduce:
- Use of appropriate maps and checkpoints.
- Time distance checks.
- Barrier features.
- Prominent terrain features.
- Additional crew chief responsibilities over unfamiliar terrain.
- Navigation procedures.

Review:
- Communication.
- SA.
- Night startup/shutdown.
- Aircraft lighting.
- Taxiing at night.
- Light discipline.
- Crew duties.
- Night lookout doctrine.

Performance Standards. Demonstrate ability to assist the pilots during navigation.

Prerequisite. FAM-110 (if flown at night, FAM-117).

3. Confined Area Landings (CAL)

a. Purpose. To develop crew chief responsibilities during CALs.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist in all aspects of CALs.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS CAL class.

e. Flight Training. (2 Flights, 3 Hours).

CAL-141 1.5 O 1 CH-46E A

Goal. Introduce CAL responsibilities.

Requirement

Discuss:
- Obstacle clearance.
- Standard terminology.
- Crew comfort levels.
- Clearance in confined areas.
- Emergencies during low level operations.
- CRM.
  - Assertiveness.
  - Leadership.

Introduce:
- Aircraft clearance while operating in confined areas.
- Terrain suitability.
- Main-mount landings.
- Slope landings.
- Wave off.
- Low level operations.

Review:
- Crew responsibilities.
- Clearance calls.

Performance Standards. Demonstrate the ability to successfully crew the aircraft to the deck for a minimum of 5 landings.

Prerequisite. FAM-116.

External Syllabus Support. Various CAL sites.

External Syllabus Support. CAL sites suitable for NS use.

4. Formation (FORM)

a. Purpose. To familiarize the CCUI with functions and responsibilities during formation flying.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist pilots in all aspects of formation flight.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS Formation Flying class.

e. Flight Training. (2 Flights, 3 Hours).

FORM-151 1.5 O 2 CH-46E A

Goal. Introduce formation flight/section CAL responsibilities.

Requirement

Discuss:
- Lost communications procedures.
- Crew chief responsibilities during inadvertent IMC.
- CRM.
  - Communication.
  - Leadership.

Introduce:
- Lookout procedures for wingman.
- Turn patterns.
- Breakup and rendezvous.
- Section takeoffs and landings to an unimproved surface.

Review:
- Crew responsibilities.
- SA.
- Distance estimation.
- Crew coordination.
- Lookout doctrine.

Performance Standards
Maintain SA of wingman throughout evolution.
Demonstrate proper crew chief duties.
Utilize standard terminology.
Demonstrate proper distance estimation within two feet of actual height.

Prerequisite. CAL-141.

External Syllabus Support. Availability of large LZ.

5. External Loads (EXT)

a. Purpose. To develop CCUI skills necessary for external cargo operations.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist the pilot during day external operations.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. Review of NAVAIR 01-250-HDA-9.

e. Flight Training. (1 Flight, 1.5 Hours).

EXT-161 1.5 O 1 CH-46E A

Goal. Introduce external cargo operations.

Requirement

Discuss:
- Standard terminology.

Static discharge precautions.
Lost communications.
Hand signals.
Emergency procedures.
Emergency release procedures.
Crew duties.
CRM.
Decision making.
Communication.

Introduce:
Communications.
External operations.
Hook and pendant preflight.
Load release procedures.

Review:
Obstacle clearance.
SA.

Performance Standards
Properly configure aircraft.
Successfully complete five pickups and dropoffs.
Demonstrate standard terminology.
Execute proper safety precautions.

Prerequisite. FAM-116.

External Syllabus Support. External load.

5. Terrain Flight (TERF)

a. Purpose. To introduce the CCUI to TERF maneuvers and to emphasize the importance of crew coordination, crew comfort level, and standard terminology.

b. General. At the completion of this stage of flight, the CCUI will be able to demonstrate the ability to assist the pilots during day TERF maneuvers.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS TERF class.

e. Flight Training. (1 Flight, 1.5 Hours).

TERF-171 1.5 O 1 CH-46E A

Goal. Introduce TERF maneuvers.

Requirement

Discuss:
Obstacle clearance.
Standard terminology.
Crew comfort levels.
Wave off.
Clearance in confined areas.
Emergencies during low level operations.
CRM.

Assertiveness.
Communication.

Introduce:
Blade walk.
Hover check theory.
TERF maneuvers.
Bunts.
Rolls.
Masking and unmasking.
Spiral approach.
Low level quick stop.
Zoom climb.

Review:
Crew responsibilities.
Clearance calls.

Performance Standards. Demonstrate a basic understanding of TERF maneuvers.

Prerequisite. ACAD022,FAM-116.

External Syllabus Support. Low level TERF area in controlled airspace.

6. Night Systems (NS), High Light Level (HLL)

a. Purpose. To introduce skill in the use of NS under light levels greater than .0022 LUX (HLL)) as predicted by the computer generated light level calendar.

b. General

(1) All initial and Refresher flights require a Enlisted Night Systems Instructor (ENSI)or a enlisted Night Systems Familiarization Instructor (ENSFI).

c. Crew Requirement. CC/ENSFI.

d. Prerequisite. FAM-141.

e. Academic Training. NS Nite Lab.

f. Flight Training. (1 Flights, 1.5 Hours).

NS-181 1.5 O CH-46E A NS

Goal. Introduce NS flight.

Requirement

Discuss:
Crew comfort levels.
NS failures.
Depth perception.
Aircraft lighting.
Emergency procedures.
CRM.
Mission analysis.

Assertiveness.

Introduce:
- Use of NS during low level operations.
- Aircraft configuration.
- Taxiing on NS.
- Use of NS at an unlit field.
- Ground relationships.

Review:
- Communication.
- Lookout doctrine.
- Night startup/shutdown.
- Aircraft lighting.
- Taxiing signals.
- Light discipline.
- Crew duties.
- Vertigo.

Performance Standards. Apply basic NS skills as outlined in the MAWTS-1 NVD manual.

Prerequisite. Completion of NITE Lab and FAM-117.

NS-182 1.5 O 1 CH-46E A NS

Goal. Introduce flight duties during NS navigation.

Requirement

Discuss:
- Fuel management checks.
- Crew comfort Levels.
- NS failures.
- Emergency procedures.
- CRM.
  - Adaptability/flexibility.
  - Mission analysis.

Introduce:
- Additional crew chief responsibilities over unfamiliar terrain on NS.

Review:
- Use of appropriate maps and checkpoints.
- Time distance checks.
- Barrier features.
- Prominent terrain features.
- Assisting pilots.
- Light discipline.
- Aft station checks.

Performance Standards. Demonstrate ability to assist pilots during NS navigation.

Prerequisite. NAV-131 and NS-181.

NS-183 1.5 O 1 CH-46E A NS

Goal. Introduce NS CALs.

Requirement

Discuss:
- Obstacle clearance.
- Task saturation.
- Crew comfort levels.
- Wave off.
- Distance estimation.
- Clearance in confined areas.
- Emergency procedures.
- CRM.
  - SA.
  - Assertiveness.

Introduce:
- LZ lighting.
- Aircraft clearance on NS.
- LZ suitability.

Review:
- Headwork.
- Crew responsibilities.
- Light discipline.
- Clearance calls.
- NS failures.
- Depth perception.

Performance Standards. Demonstrate the ability to successfully call the aircraft to the deck utilizing NS a minimum of five times using standardized terminology.

Prerequisite. NS-181 and CAL-141.

External Syllabus Support. CAL sites suitable for NS use.

6. Crew Chief Evaluation (CSIX)

a. Purpose. To review all duties and emergency procedures of a Core Skill Introduction crew chief per this syllabus and NATOPS publications.

b. General

(1) Completion of this stage meets the requirements for designation as a crew chief.

(2) The CCI shall be a designated NATOPS Evaluator and CRM Facilitator/Instructor.

c. Crew Requirement. CCI/CCUI.

d. Academic Training

(1) Completion of open/closed book and 12-week evaluations.

(2) Completion of plane captain syllabus.

e. Flight Training. (2 Flights, 3.5 Hours).

REW-191 1.5 O E 1 CH-46E A (N)

Goal. Review duties, limitations, responsibilities, taxiing procedures, and emergency procedures.

Requirement

Discuss:
- Preparation.
- Time management.
- Daily/turnaround procedures.
- Startup/shutdown.
- Taxi procedures.
- Back taxi procedures.
- Application of CRM.

Introduce:
- Total crew chief responsibility for the aircraft.
- Plane captain responsibilities.

Review:
- Crew/passenger brief.
- Aircraft configuration.
- Emergency procedures.
- Limitations.
- ICS usage.
- Estimating distances.
- Safety precautions.
- Systems knowledge.
- Crew duties.
- Lookout doctrine.

Performance Standards. Demonstrate proficiency as a crew chief as stated in the NATOPS and OPNAV 3710.7.

Prerequisite. ACAD 031,NS LAB,FAM-117.

CSIX-192 1.5 O E 1 CH-46E A (N)

Goal. Evaluate CCUI’s systems knowledge of the CH-46E and the capability to perform duties as a Core Skill Introduction complete crew chief.

Requirement

Discuss:
- Preparation.
- Time management.
- Daily/turnaround procedures.
- Taxi procedures.
- Aircraft systems.

Review
- Crew/passenger brief.
- Aircraft configuration.
- Emergency procedures.
- Limitations.
- ICS usage.

Estimating distances.
Safety precautions.
Systems knowledge.
Crew duties.
Lookout doctrine.

Performance Standards. Demonstrate proficiency as a crew chief as stated in the NATOPS and OPNAV 3710.7.

Prerequisite. All prior 100-level flights.

232. CORE SKILL BASIC PHASE

1. Familiarization (FAM)

a. Purpose. To enhance skills of crew functions and responsibilities during day or night flights.

b. General

(1) At the completion of this stage, the CC/AGOUI will demonstrate the ability to assist the entire crew during day or night flights.

(2) FAM-201 is the initial FAM flight for the AGOUI.

(3) If FAM 201 is flown on NS the aircrew shall be NSQ for the appropriate light level or be under the supervision of an ENSI. Initial events shall be conducted during the day.

c. Crew Requirement. CC, CC/CCUI or CC/AOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CC or AGOUI shall the courses listed in the MAWTS-1 ASP.

e. Flight Training. (1 Flight, 2.0 Hours).

FAM-201 2.0 R 1 CH-46E A (N)

Goal. Develop lookout doctrine during FAM flights.

Requirement

Discuss:
Lookout responsibilities.
ICS procedures.
SA.
CRM.
Crew comfort levels.
Local course rules.

Introduce:
Assisting the pilot during FAM operations.

Review:
Standard terminology and lookout doctrine.

Performance Standards. Demonstrate proper lookout doctrine and CRM.

Prerequisite. Academics listed in the MAWTS-1 ASP.

External Syllabus Support. Landing areas.

2. Confined Area Landings (CAL)

a. Purpose. To develop crew coordination during confined area operations.

b. General. At the completion of this stage, the CC/AGOUI will be able to demonstrate the ability to assist the pilots in day CALS.

c. Crew Requirement. CC, CC/CCUI or CC/AGOUI.

d. Ground/Academic Training. As listed in the MAWTS-1 Course Catalog.

e. Flight Training. (2 Flights, 3.0 Hours).

CAL-211 1.5 1 CH-46E A

Goal. Review single aircraft CAL operations; develop skills with tactical approaches and departures.

Requirement

Discuss:
- CRM.
- Obstacle clearance.
- Standard terminology.
- Distance estimation.
- Low altitude emergencies (i.e. landing in trees).
- Rotor blade clearances (blade walk).
- LZ evaluation.
- Wave off/brownout procedures.

Review:
- Lookout doctrine.
- ICS procedures.
- Aircraft clearance and terrain suitability.
- Distance estimation.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception

Prerequisite. FAM-201.

External Syllabus Support. CAL zone.

CAL-212 1.5 R,O 2+ CH-46E A

Goal. Conduct section CAL operations.

Requirement

Discuss:
- CRM.
- Lookout doctrine.
- Obstacle clearance.
- Distance estimation.
- Wingman position.

Wave off/brownout procedures.

Introduce:
Crew responsibilities during section CAL operations.

Review:
Formation and lookout procedures emphasizing responsibilities during section operations.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintaining SA of wingman throughout the evolution.

Prerequisite. CAL-211.

External Syllabus Support. CAL zone that supports multiply aircraft.

3. External Cargo Operations (EXT)

a. Purpose. To develop proficiency with external cargo operations and introduce external cargo operations in confined areas with close coordination of a Helicopter Support Team (HST).

b. General. At the completion of this stage, the CC/AOUI will be able to demonstrate the ability to assist the pilot in day external cargo operations from confined areas. CRM shall be discussed as applicable to each event.

c. Crew Requirement. CC, CC/CCUI.

d. Ground/Academic Training. Read appropriate chapters of the NATOPS Manual and Air NTTP 3-22 publications.

e. Flight Training. (1 Flight, 1.5 Hours).

EXT-221 1.5 R,O 1 CH-46E A

Goal. Conduct external load operations to a confined area.

Requirement

Discuss:
CRM.
Communication procedures.
Aircraft emergencies during external operations.
Load jettison procedures.
Capabilities and limitations of the hook.
Cargo hook preparation.
Standard terminology.
Lost communication procedures/hand signals.

Introduce:
HST procedures.

Performance Standards. Demonstrate the ability to give commands to the pilot at the controls of the aircraft to effect hookup and delivery the load within 5 meters of

intended point of delivery with minimal difficulty utilizing standard terminology while maintaining obstacle clearance.

Prerequisite. CAL-211.

External Syllabus Support. HST, external load and pickup/drop zone.

4. Formation Flight (FORM)

a. Purpose. To review formation and introduce tactical formation maneuvering.

b. General. At completion of this stage, the CC/AOUI will demonstrate the ability to assist the pilot during day or night formation flight operations. CRM shall be discussed as applicable to each event.

c. Crew Requirement. CC/AGO, CC/CCUI or CC/AGOUI.

d. Ground/Academic Training. Review tactical formations as listed in the Air NTTP 3-22publications. and MAWTS-1 ASP.

e. Flight Training. (1 Flight, 1.5 Hours).

FORM-231 1.5 R 2+ CH-46E A

Goal. Review formation and introduce tactical formation maneuvering.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Lead changes.
- Standard terminology.
- Tactical formation maneuvering.
- Aircraft clearance.
- Appropriate formation maneuvers against a F/W threat, R/W threat, IR missile threat, radar guided missile threat, and AAA threat.
- Intra and inter aircraft communications.
- Distance estimation.

Introduce:
- Break turns, center turns, pinch/dig, cover, TAC turns, in-place turns, and cross turns.
- Combat spread and combat cruise formations.

Review:
- Lookout procedures.
- Communication procedures.

Performance Standards. Demonstrate the ability to perform and understand TAC FORM maneuvering.

Prerequisite. FAM-201.

5. Terrain Flight (TERF)

a. Purpose. To qualify the CC/AGOUI in TERF and TERF navigation and to emphasize the importance of crew coordination, crew comfort level, and standard terminology.

b. General

(1) An enlisted TERFI (ETERFI) is required for this stage of instructional flight.

(2) Successful completion of TERF-243 constitutes TERF qualified. A qualification letter signed by the commanding officer stating the CC/AGOUI is TERFQ is required. The original shall be placed in the CC/AGOUI NATOPS jacket, and a copy in the APR with a corresponding logbook entry.

(3) T&R Program Manual establishes TERF altitude restrictions and currency requirements.

c. Crew Requirement. CC/AGO, ETERFI/CCUI or ETERFI/AGOUI.

d. Ground/Academic Training

(1) CH-46 Crew Chief TERF Course, listed in the MAWTS-1 Course Catalog prior to beginning this stage of training.

(2) Familiarity with Air NTTP 3-22 publications and T&R Program Manual.

e. Flight Training. (3 Flights, 4.5 Hours).

TERF-241 1.5 1 CH-46E A

Goal. TERF maneuvers.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Obstacle clearance.
- Lookout doctrine.
- Emergencies during low level operations.
- TERF maneuvers.
- Differences between TERF flight regimes.

Introduce:
- TERF maneuvers/blade walk procedures.

Review:
- TERF maneuvers and aircraft clearance.

Performance Standards. Demonstrate knowledge of TERF maneuvers in tactical situations.

External Syllabus Support. TERF area (restricted area preferred).

TERF-242 1.5 R 1 CH-46E A

Goal. Assist the pilots in navigation of a TERF route in the low level and contour profile.

Requirement

Discuss:
- CRM.
- Crew comfort level.
- Communication.
- Map/NAV procedures.
- Terrain recognition.
- Obstacle clearance.

Introduce:
- Assist pilots in navigation, use of checkpoints, barrier features and prominent terrain features.

Review:
- Map/Nav procedures, emergency procedures during low level operations, and blade walk procedures.

Performance Standards. Assist pilots in navigation of a minimum of five checkpoints at or below 200' AGL remaining oriented on route within 500 meters.

Prerequisite. TERF-241.

External Syllabus Support. TERF route (restricted area preferred).

TERF-243 1.5 R, O 2 CH-46E A

Goal. Review TERF/Nav procedures and demonstrate the ability to navigate a TERF route in the contour and low level profiles. TERF evaluation/review.

Requirement

Discuss:
- CRM.
- CC/AGO responsibilities during low altitude flight.
- Communication.
- Navigational assistance.
- Lookout doctrine.
- Low altitude emergency procedures.
- Multi-aircraft operations.
- Threat awareness.
- Lead changes.
- Tactical formation maneuvering.
- Crew comfort level.
- Map and navigation procedures.

Review:
- TERF-241 and TERF-242.

Performance Standards. Demonstrate knowledge of terrain flight as it applies to the CH-46E and assist pilots in navigation of a minimum of five checkpoints at or below 200' AGL remaining oriented on route within 500 meters.

Prerequisite. TERF-242.

External Syllabus Support. TERF route (restricted area preferred).

6. Night Systems (NS), High Light Level (HLL)

a. Purpose. To develop skill in the use of NS under light levels greater than .0022 LUX (HLL)) as predicted by the computer generated light level calendar and to qualify the CC/AGO in NS HLL operations.

b. General

(1) All initial and Refresher flights require a Enlisted Night Systems Instructor (ENSI).

(2) Successful completion of NS-257 constitutes Night Systems Qualified (NSQ HLL). A qualification letter, signed by the commanding officer stating the CC/AOUI is NSQ HLL is required to be qualified to carry troops under HLL conditions. The original shall be placed in the CC/AGOUI's NATOPS jacket, and a copy in his APR with a corresponding logbook entry.

c. Crew Requirement. CC/AO, ENSI/CCUI or ENSI/AOUI.

d. Prerequisite. CAL-211.

e. Academic Training. CH-46 Night Systems Operations Course as listed the MAWTS-1 Course Catalog shall be completed prior to conducting NS flights.

f. Flight Training. (7 Flights, 10.5 Hours).

NS-251 1.5 R, O 1 CH-46E A NS

Goal. Introduce NS single aircraft CALs in HLL.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- NS use and limitations.
- NS failures.
- Emergencies.
- Inadvertent IMC.
- Aircraft lighting.
- Light discipline
- Use of IR searchlight.
- Depth perception.
- Obstacle clearance.

Introduce:
- CALs at various unlit CAL sites.

Review:
- CAL-211.

Performance Standards. Utilizing NS, demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception utilizing NS.

Prerequisite. CAL-211.

External Syllabus Support. NS landing zones.

NS-252 1.5 2 CH-46E A NS

Goal. Conduct NS formation flight in HLL.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Lead changes.
- Aircraft lighting.
- Closure rate.
- Distance estimation.
- NS procedures and emergencies.
- Relative motion and depth perception problems at night.
- Lookout doctrine.

Introduce:
- NS formation flight.

Review:
- FORM-231.

Performance Standards. Demonstrate the ability to conduct formation flight while utilizing NS.

Prerequisite. FORM-231 and NS-251.

External Syllabus Support. None.

NS-253 1.5 R,O 2 CH-46E A NS

Goal. Introduce section NS tactical section approaches, landings, and departures to a confined area in HLL.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- NS navigation techniques.
- NS failures.
- Emergencies.
- Inadvertent IMC.
- Aircraft lighting.
- Use of IR searchlight.
- Depth perception.
- Obstacle clearance.

Review:
Section takeoffs/landings at various unlit CAL sites.

Performance Standards. Utilizing NS, demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of wingman throughout the evolution.

Prerequisite. CAL-212 and NS-252.

External Syllabus Support. NS landing zones that accommodate multiple aircraft.

NS-254 1.5 3+ ACFT A NS

Goal. Conduct NS division formation and CALs.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS division takeoffs and landings.
NS formation techniques.
Inadvertent IMC.
Obstacle clearance.
Lookout doctrine.
Standard terminology.

Introduce:
NS division CALs.

Review:
NS-253.

Performance Standards. Utilizing NS, demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of the division throughout the evolution.

Prerequisite. NS-253.

External Syllabus Support. NS landing zones that accommodates multiply aircraft.

NS-255 1.5 1 CH-46E A NS

Goal. Conduct NS TERF navigation.

Requirement

Discuss:
CRM.
Crew comfort levels.
Obstacle clearance.
Lookout doctrine.
NS navigation techniques.
Emergencies during low level operations.

Introduce:
NS TERF NAV procedures.

Review:
Map, orientation, and NS navigation techniques.
Navigation along a predetermined route of at least 5 checkpoints remaining oriented along the route.

Performance Standards. Demonstrate the ability to assist the pilots in navigation of a minimum of 5 checkpoints remaining oriented on route within 500 meters while utilizing NS.

Prerequisite. TERF qualified and NS-251.

External Syllabus Support. NS TERF route (special use airspace preferred).

NS-256 1.5 O 2 CH-46E A NS

Goal. Conduct NS TERF formation flight.

Requirement

Discuss:
Crew comfort levels.
CRM.
NS navigation techniques.
NS formation techniques.
Emergency procedures during night low level operations.
NS failures.
Inadvertent IMC.
Lookout doctrine.

Introduce:
NS TERF NAV.

Review:
NS formation techniques to include parade position, cruise principles, crossovers, breakup and rendezvous and lead changes.
NS navigation techniques.

Performance Standards. Demonstrate the ability to assist the pilots in navigation of a minimum of 5 checkpoints at or below 200’ AGL remaining oriented on route within 500 meters while utilizing NS.

Prerequisite. TERF qualified, NS-252 and 255.

External Syllabus Support. NS TERF route (restricted area preferred).

NS-257 1.5 R,O 2 CH-46E A NS

Goal. Conduct/evaluate NS TERF formation, navigation, and section CALs.
Requirement

Discuss:
CRM.

Crew comfort levels.
Tactical formations.
NS procedures and emergencies.
Aircraft lighting.
NS navigation techniques.
Low altitude emergencies.
Inadvertent IMC.

Performance Standards. Demonstrate the ability to conduct NS HLL TERF, navigation, formation flight, and CALS in a HLL environment.

Prerequisite. NS-254, and 256.

External Syllabus Support. NS landing zones and approved TERF route (special use airspace preferred).

7. Air-to-Ground (AG)

a. Purpose. To develop proficiency/CRM skills with crew served weapons and aerial gunnery procedures.

b. General

(1) Initial instructional flights shall be conducted by a designated EWTI or AGI.

(2) At the completion of this stage, the aircrew will demonstrate knowledge of weapons systems and proficiency during day weapons delivery.

c. Crew Requirement. CC/AG0, AGI/CCUI or AGI/AGOUI.

d. Ground/Academic Training

(1) Academic training will be conducted by a EWTI or AGI.

(2) CH-46 Crew Member Aerial Gunnery Academic Course, using the MAWTS-1 ASP. Courses are listed in the MAWTS-1 Course Catalog.

e. Simulator/Flight Training. (1 Event, 1.5 Hours, 3 Flights, 4.5 Hours).

SAG-280 1.5 WST

Goal. Introduce the CCUI/AGUI to aerial gunnery procedures.

Requirement

Discuss:
CRM.
ICS procedures.
Safety.
Weapons conditions.
Weapons commands.
Weapons malfunctions/stoppages/emergencies.
Crew served weapons checklist application.
Muzzle awareness.
Weapons preparation/nomenclature.

Introduce:
Day aerial gunnery while firing on pre-briefed targets.

Review:
Assault Support Aerial Gunnery Manual and CH-46E Tactical Manuals.

Performance Standards. Demonstrate the ability to conduct day aerial gunnery.

Prerequisite. Aerial Gunnery Academic Course as listed in the MAWTS-1 ASP.

External Syllabus Support. Crew served aerial gunnery simulator capable of demonstrating day air-to-ground/air-to-air gunnery. The trainer must be capable of being tied to the pilot simulator.

AG-281 1.5 1+ CH-46E A

Goal. Introduce the CCUI/AGOUI to aerial gunnery procedures.

Requirement

Discuss:
CRM.
ICS procedures.
Safety.
Weapons conditions.
Weapons commands.
Weapon malfunctions/emergencies.
Crew served weapons checklist.
Aiming techniques.
Muzzle awareness.
Weapons preparation/nomenclature.

Introduce:
Preparation of weapons and aircraft.
Aerial gunnery employment.
Firing on pre-briefed targets.

Review:
Assault Support Aerial Gunnery Manual.

Performance Standards. Demonstrate the ability to properly employ the .50 cal weapon during day aerial gunnery and hit the target with 50% of the rounds fired at the target.

Prerequisite. SAG-280.

Ordnance. 500 rounds .50 cal.

Range requirements. Appropriate aerial gunnery range equipped with multiple scored targets ranging from APC size to personnel.

AG-282 1.5 R,O 2 CH-46E A

Goal. Introduce multi-aircraft weapons employment considerations.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapon malfunctions/emergencies.
- Crew served weapons checklist.
- Aiming techniques.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Formation flight during aerial gunnery.

Introduce:
- Multi-aircraft operations.
- Sectors of fire.
- Firing on pre-briefed targets while aircraft is maneuvering to include running, diving, and hover fires.

Review:
- Preparation of weapons and aircraft.
- Aerial gunnery procedures.

Performance Standards. Demonstrate ability to properly employ the .50 cal weapon during day aerial gunnery within a section of aircraft and hit the target with 50% of the rounds fired at the target.

Prerequisite. AG-281.

Ordnance. 500 rounds .50 cal.

Range requirements. Appropriate aerial gunnery range equipped with multiple scored targets ranging from APC size to personnel.

AG-283 1.5 R, O 1 CH-46E A

Goal. Introduce aerial gunnery against a moving target.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/emergencies.
- Crew served weapons checklist.
- Aiming techniques.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Mil sight values/range estimation.
- Lead techniques.

Introduce:
- Preparation of weapons and aircraft.

Aerial gunnery against a moving target.
Firing on pre-briefed targets.
Lead techniques at a moving target.

Review:
Assault Support Aerial Gunner Manual and CH-46E Tactical Manual.

Performance Standards. Demonstrate the ability to employ the weapon at a moving target and hit the target with 50% of the rounds fired at the target.

Prerequisite. AG-282.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. Appropriate aerial gunnery range configured with a scored moving target.

8. Carrier Qualification (CQ)

a. Purpose. To qualify the crewmember in day, night unaided, and NS FCLPs.

b. General. Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for Shipboard Operations.

(1) An ENSI is required for initial/refresher NS FCLP flights.

(2) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

1 Five day FCLPs.

2 Five NS FCLPs.

(b) Aircrew previously night CQ and proficient shall complete the following to maintain proficiency:

1 Two day FCLPs.

2 Two NS FCLPs. (Note: CQ-293 chains CQ-292 and CQ-291).

(3) CQ-293 may be flown under any light level condition. CCUI/AGOUI must be NSQ for appropriate light level.

(4) Aircrew shall discuss CRM as applicable to each event.

c. Crew Requirement

(1) CQ-291 require CC or CC/CCUI.

(2) CQ-293 requires either CC/AGO, ENSI/CCUI, or ENSI/AGOUI.

d. Ground/Academic Training. Review appropriate LHA/LPH/LHD NATOPS Manual and NWP-42 for carrier operations.

e. Flight Training. (2 Flights, 2.0 Hours).

CQ-291 1.0 O 1 CH-46E A

Goal. Conduct day FCLPs.

Requirement

Discuss:
CRM.
Communications.
LSE signals.
Landing direction.
Water landings.
Salt encrustation.
Waveoff.
Crew comfort levels.
Lookout doctrine.

Introduce:
Day FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review:
Appropriate LHA/LPH/LHD NATOPS Manual and NWP-42 for carrier operations.

Performance Standards. Demonstrate the ability/knowledge to perform shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CAL-211.

External Syllabus Support. Approved FCLP pad.

CQ-293 1.0 O 1 CH-46E A NS

Goal. Introduce NS FCLP patterns.

Requirement

Discuss:
CRM.
Communications.
LSE signals.
Aircraft lighting.
Wave off.
Crew comfort levels.
Lookout doctrine.
NS procedures/operations.

Introduce:
NS FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations. Use LSE light signals if available.
Review:
CQ-291

Performance Standards. Demonstrate the ability/knowledge to perform NS shipboard flight operations to include LSE hand and

arm signals and be able to assist the pilot to land within 1 meter of intended point of landing.

Prerequisite. NS-251 and CQ-291.

External Syllabus Support. Approved FCLP pad.

233. CORE SKILL ADVANCED PHASE

1. Carrier Qualification (CQ)

a. Purpose. To train/refresh the CC/AGO in day and NS CQs.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) Night CQ Requirements

(a) Requirements for initial/Refresher/delinquent qualification are:

1 Five day CQs.

2 Five NS CQs.

(b) CC/AGOs previously night carrier qualified and proficient per para 2(a) above shall complete the following to maintain proficiency:

1 Two day CQs.

2 Two NS CQs. (Note: CQ-301 chains CQ-300 and CQ-491)

(3) CQ-301 shall be flown under HLL conditions for initial/refresher qualification. ENSI required for initial/refresher NS flights. Currency and re-qualification flights may be flown under any light level condition.

(4) CC/AGO is CQ on completion of CQ-300, CQ-301.

(5) CC/AGOs are authorized to carry passengers during daylight hours when proficient in CQ-300.

(6) CC/AGOs are authorized to carry passengers when proficient and current in CQ-301and for the appropriate light level.

(7) CC/AGO shall discuss CRM as applicable to each event.

c. Crew Requirement

(1) CQ-300 requires CC or CC/CCUI.

(2) CQ-301 requires either CC/AO, ENSI/CCUI, or ENSI/AOUI.

d. Ground/Academic Training. None.

e. Flight Training. (2 Flights, 2.0 Hours).

CQ-300 1.0 O 1 CH-46E A

Goal. Conduct day CQ.

Requirement

Discuss:
CRM.
Communications.
LSE signals.
Shipboard procedures.
Wave off.
Crew comfort levels.
Lookout Doctrine.
Emergency procedures during shipboard operations.

Introduce:
Day carrier landing procedures.

Review:
Day FCLP patterns.
Approaches.
Landings.
Emergency procedures peculiar to shipboard operations.

Performance Standards. Demonstrate the ability/knowledge to perform shipboard flight operations to include LSE hand and arm signals and be able to assist the pilot to land within 1 meter of intended point of landing.

Prerequisite. CQ-291 (if available).

External Syllabus Support. Air capable ship deck.

CQ-301 1.0 R,O 1 CH-46E A NS

Goal. Conduct NS CQ.

Requirement

Discuss:
CRM.
Communications.
LSE signals.
NS procedures/operations.
Aircraft lighting.
Shipboard lighting.
Wave off.
Crew comfort levels.
Lookout doctrine.

Introduce:
NS carrier landings.

Review:
NS FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Performance Standards. Demonstrate the ability/knowledge to perform NS shipboard flight operations to include LSE hand and arm signals and be able to assist the pilot to land within 1 meter of intended point of landing.

Prerequisite. CQ-293 (if available) and CQ-300.

External Syllabus Support. NS capable ship deck.

2. Night Systems (NS), Low Light Level (LLL)

a. Purpose. To qualify the CC/AGOUI in NS LLL flight operations.

b. General

(1) An ENSI is required for this stage.

(2) Successful completion of NS-314 constitutes NSQ. A qualification letter signed by the commanding officer stating the CC/AGOUI is NSQ is required to carry troops under any ambient light level condition. The original shall be placed in the CC/AGOUI's NATOPS jacket and APR with a corresponding logbook entry.

(3) Prerequisite

(a) Aircrew shall be NSQ HLL.

(b) All initial/Refresher flights require a ENSI.

(c) Aircrew shall fly all events in light levels less than .0022 lux.

c. Crew Requirement. CC/AO, ENSI/CCUI or ENSI/AOUI.

d. Ground/Academic Training

(1) Appropriate chapters of the MAWTS-1 NVD Manual.

(2) Read appropriate chapters of the NATOPS manual.

(3) Read appropriate paragraphs of the Air NTTP 3-22 publications.

e. Flight Training. (4 Flights, 6.0 Hours).

NS-311 1.5 R,O 1 CH-46E A NS

Goal. Introduce single aircraft NS LLL CALs.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS failures.
Emergencies.
Inadvertent IMC.
Aircraft lighting.
Distance estimation.
Depth perception.
Effects of LLL environment on NS.
Wave off/brownout procedures.

Introduce:
Confined area takeoffs and landings at various unlit CAL sites under LLL conditions.

Review:
NS-251.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception.

Prerequisite. NS-257.

External Syllabus Support. CAL site.

NS-312 1.5 R 2 CH-46E A NS

Goal. Introduce NS LLL section CALs.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS navigation techniques.
NS failures.
Emergencies.
Inadvertent IMC.
Aircraft lighting.
Depth perception.
Distance estimation.
Wingman position.
Wave off/brownout procedures.

Introduce:
LLL section CALS.

Review:
Section takeoffs and landings at various unlit CAL sites.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of the wingman throughout the evolution.

Prerequisite. NS-311.

External Syllabus Support. CAL site.

NS-313 1.5 R,O 3+ ACFT A NS

Goal. Conduct NS LLL formation and division CALs.

Requirement

Discuss:
CRM during NS LLL formation.
Crew comfort level during NS LLL formation operations.
External aircraft lighting considerations during NS LLL formation operations.

Introduce:
NS LLL formation.
NS LLL division CALs.

Review:
NS-254.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of the division throughout the evolution.

Prerequisite. NS-312.

External Syllabus Support. CAL sites.

NS-314 1.5 R,O 2 CH-46E A NS

Goal. Conduct NS LLL TERF formation, navigation and section CALS. This flight is the NS LLL evaluation/review for certification as NSQ.

Requirement

Discuss:
CRM.
Crew comfort levels.
Obstacle clearance.
Lookout doctrine.
NS navigation techniques.
Emergencies during low level operations.
Depth perception
Distance estimation.
Wave off/brownout procedures.

Introduce:
LLL TERF/NAV.

Review:
Map preparation, orientation, and NS navigation techniques.
Navigation along a predetermined route of at least 5 checkpoints remaining oriented along the route.
Aircraft operations in a LLL environment.

Performance Standards. Demonstrate the ability to conduct NS section TERF, NAV, CALs and formation flight in a LLL environment.

Prerequisite. NS-313.

External Syllabus Support. CAL site and approved NS navigation route.

3. Air-to-Ground (AG)

a. Purpose. To qualify the CCUI/AOUI with NS crew served weapon AG procedures.

b. General

(1) Aerial gunnery qualification lectures and initial instructional flights in this stage shall be conducted by a designated EWTI or NSI/AGI.

(2) Successful completion of AG-322 constitutes Aerial Gunnery Qualified (AGQ). A qualification letter signed by the commanding officer stating the CC/AGOUI is AGQ is required. The original shall be placed in the CC/AGOUI's NATOPS jacket and APR with a corresponding logbook entry.

(3) The AGOUI or CCUI must be NSQ for the appropriate light level being flown before flying any NS aerial gunnery flights.

(4) Laser aiming devices are required for AG-321 and AG-322.

c. Crew Requirement. CC/AG, ENSI-AGI/CCUI or ENSI-AGI/AGOUI.

d. Ground/Academic Training. Prior to conducting this stage of training, the Laser Safety class from the MAWTS-1 ASP shall be taught.

e. Prerequisite. AG-281, AG-282 and AG-283.

f. Simulator/Flight Training. (1 Event, 1.5 Hours, 2 Flights, 3.0 Hours).

SAG-320 1.5 WST NS

Goal. Introduce the CCUI/AGUI to NS aerial gunnery procedures.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Effects while on NS.
- Laser aiming devices/procedures.

Introduce:
- NS aerial gunnery while firing on pre-briefed targets.

Review:
- MAWTS-1 Assault Support Aerial Gunnery Manual and CH-46E Tactical Manuals.

Performance Standards. Demonstrate the ability to conduct NS aerial gunnery.

Prerequisite. AG-281, 282, and 283.

External Syllabus Support. Crew served aerial gunnery simulator capable of demonstrating NS air-to-ground/air-to-air

gunnery. The trainer must be capable of being tied to the pilot simulator.

AG-321 1.5 1 CH-46E A NS

Goal. Introduce NS AG gunnery.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Effects while on NS.
- Laser aiming devices/procedures.

Introduce:
- NS weapons employment techniques.
- Firing on pre-briefed targets while wearing NS.

Review:
- All previous aerial gunnery work.

Performance Standards. Demonstrate knowledge of the cycle of operation, nomenclature, employment of the XM-218 .50 cal machine gun. Demonstrate the ability to fire at pre-briefed targets while utilizing NS and hit the target with 50% of the rounds fired at the target.

Prerequisite. SAG-320.

Ordnance. 500 rounds .50 cal, laser aiming device.

Range requirements. Appropriate Laser authorized aerial gunnery range equipped with multiple scored targets ranging from APC size to personnel.

AG-322 1.5 R,O 2 CH-46E A NS

Goal. Demonstrate proficiency with NS weapons employment in a multi-aircraft flight. This is the aerial gunner evaluation/review flight.

Requirement

Evaluate/Review:
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- Muzzle awareness.
- Weapons preparation/nomenclature.

Effects while on NS.
Laser aiming devices/procedures.

Introduce:
Firing on pre-briefed targets while aircraft is maneuvering; e.g., running, diving, and hover fires (while wearing NS).

Review:
AG-321.

Performance Standards. Demonstrate knowledge of ballistics, the cycle of operation, nomenclature and employment of the XM-218 .50 cal machine gun. Demonstrate the ability to fire at pre-briefed targets while utilizing NS and hit the target with 50% of the rounds fired at the target.

Prerequisite. AG-321.

Ordnance. 500 rounds .50 cal, laser aiming device.

Range requirements. Appropriate Laser authorized aerial gunnery range equipped with multiple scored targets ranging from APC size to personnel.

4. Ground Threat Reaction (GTR)

a. Purpose. To introduce and develop proficiency in using Aircraft Survivability Equipment (ASE), tactics, and on-board defensive weapon systems to evade ground-to-air threats.

b. General

(1) Conduct GTR-331 against simulated surface to air fires (smokey SAMS, MADSS, Malina/BARC, hand-held pyrotechnics, etc.) and 332 against threat emitters (e.g. SA-8, ZSU 23-4, etc.) and use ground based threat simulation.

(2) Refer to NTRP 3-22.4 Naval Aviation Technical Information Publication (NATIP) and the Air NTTP 3-22.3 for ASE operating procedures. Refer to Air NTTP 3-22.3 Appendix B for GTR training standards.

(3) .50 cal machine guns should be mounted for all GTR flights. M240 Ramp Fired Weapon (RFW) may be employed in accordance with NATOPS.

(4) GTR flights will be conducted no lower than 50ft.

(5) Enlisted Aircrew instructors shall not have lookout duties during initial training events.

(6) All initial flights shall be conducted during the daytime and require a GTR-proficient WTI or DMI.

(7) All event participants shall attend the recommended academic training and flight brief. A walkthrough should be conducted.

c. Prerequisites

(1) TERF qualified.

(2) FORM-231.

(3) When conducted at night, all aircrew shall be NSQ (for the appropriate light level).

d. Minimum Crew Requirements. CC/AGO, EDMI or EWTI/CCUI/AGO, EDMI or EWTI/CC/AGOUI, EDMI or EWTI/CCUI/CCUI, EDMI or EWTI/AGOUI/AGOUI.

e. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog and Air NTTP 3-22.3 Appendix B. Additional training should consist of:

(1) Current theater specific ROE training from a Staff Judge Advocate.

(2) Enemy situation to include threat systems and related tactics.

GTR-331 1.5 R 2 CH-46E A (NS)

Goal. Introduce ground threat reactions in a non-radar environment.

Requirement

Discuss:
- CRM/inter-flight coordination.
- Crew comfort level.
- Lookout doctrine.
- Situational awareness.
- Use of ALE-39/47, APR-39, ALQ-157, and AAR-47 and ASE Go/No-Go procedures.
- Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.
- Tactical expendables.
- Various threat signatures with emphasis on threat recognition.
- Tactical employment of .50 cal weapon system/RFW against ground threats.
- Aerial gunnery, POO, ROE, PID, and engagement criteria.
- Intra aircraft communication.

Introduce:
- GTR against non-radar threat systems emphasizing use of all onboard ASE and defensive weapon systems.
- Threat avoidance maneuvers and tactics to counter threat systems.
- Appropriate evasive maneuvers when engaged by a non-radar ground based threat.

Review:
- AG-322.

Performance Standards. All aircrew shall demonstrate proper operation of ASE, understanding and interpretation of AAR indications, effective maneuvering in response to threat, and proper ASE employment with regard to the threat.

Prerequisite. FORM-231, AGQ.

Ordnance. 60 flares, 2 x .50 cal weapon systems, 400 rnds .50 cal, (RFW), (500 rnds 7.62mm).

Range Requirements. Live fire range and threat simulation devices (smokey SAMS, MADSS, Malina/BARC, hand-held pyrotechnics, etc.) with sufficient range space to employ and maneuver at least a division of aircraft.

GTR-332 1.5 R 2 CH-46E A (NS)

Goal. Introduce ground threat reactions in a radar environment.

Requirement

Discuss:
- CRM/inter-flight coordination.
- Crew comfort level.
- Lookout doctrine.
- Situational awareness.
- Use of ALE-39/47, APR-39, ALQ-157, and AAR-47 and ASE Go/No-Go procedures.
- Use of RADAR horizons, RADAR masking, maneuver and chaff to defeat threat RADAR systems.
- Use of terrain masking, maneuver, and chaff to defeat threat radar missiles.
- Tactical expendables.
- Various threat signatures with emphasis on threat recognition.
- Tactical employment of .50 cal weapon systems/RFW against ground threats.
- Aerial gunnery, POO, ROE, PID, and engagement criteria.
- Intra/inter aircraft communication.
- Tactical formation maneuvering.

Introduce:
- GTR against RADAR threat systems emphasizing use of all onboard ASE and defensive weapon systems.
- Threat avoidance maneuvers and tactics to counter threat systems.
- Appropriate evasive maneuvers when engaged by a ground based threat in a radar environment.

Review:
- FORM-231.

Performance Standards. All aircrew shall demonstrate proper operation of ASE, understanding and interpretation of APR indications, ability to break lock when tracked, effective

maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. FORM-231 and AGQ.

Ordnance. 40 chaff, 20 flares, 2 x .50 cal weapon systems, (RFW).

Range Requirements. EW range with functional EW emitter and threat simulation devices (e.g. SA-8, ZSU 23-4, smoke grenades or pyrotechnics, etc.) with sufficient range space to employ and maneuver at least a division of aircraft.

5. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. General. At the completion of this stage of training aircrew will be familiar with operating procedures of MAT operations.

c. Crew Requirement. CC or CC/CCUI.

d. Academic Training. Refer to appropriate chapters in the NATOPS Manual for discussion on mountain landing zone characteristics.

e. Flight Training. (1 Flight, 1.5 Hours).

MAT-351 1.5 R, O 1 CH-46E A

Goal. Conduct mountainous terrain operations.

Requirement

Discuss:
- CRM.
- Standard terminology.
- Crew comfort levels.
- Landing site evaluation/terrain suitability.
- Effects of high altitude on aircraft performance.
- Emergency procedures.
- Aircraft clearances.
- Main mount/pinnacle landing procedures.

Introduce:
- Effects of wind in mountainous terrain.
- Landing on pinnacles.
- Landing on slopes.
- Landing in valleys and canyons.
- Crosswind, upslope, and down slope landings with respect to tail clearance.

Performance Standards. Demonstrate ability and knowledge of landing in mountainous terrain.

Prerequisite. CAL-211.

External Syllabus Support. Range that supports MAT.

6. Helicopter Insertion/Extraction (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, HRST Master and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, SPIE, and helocast/soft duck.

(2) The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of paraops and cargo drops. The crew chief shall preflight aircraft rigging.

(3) ICS cranials/gunner's belts required for Jump Master/Cast Master.

(4) Aircrew must be NSQ for flights conducted on NS.

c. Crew Requirement

(1) HIE-361 requires CC or CC/CCUI.

(2) HIE-362 requires CC/AGO, ENSI/CCUI or ENSI/AGOUI.

d. Ground/Academic Training

(1) Review Air NTTP 3-22 publications and applicable Force Orders/SOPs.

(2) Applicable courses from the MAWTS-1 course catalog.

e. Flight Training. (2 Flights, 3.0 Hours).

HIE-361 1.0 R,O 1 CH-46E A

Goal. Conduct airborne insertion/extraction (fastrope and rappel) procedures.

Requirement

Discuss:
HIGE/HOGE requirements.
CRM (pilots, crew chief, HRST master, and safety observer brief together).
ICS procedures and standard terminology.
ICS failure/hand and arm signals.
Current Force Order/Wing SOP.
Obstacle clearance and waveoff.
Emergency procedures.
Lookout doctrine.
Weapons employment.

Introduce:
Preflight of the fastrope/rappelling equipment and rigging.
Assisting the pilot in maintaining an extended hover.
Troop insertion via fastrope/rappelling.
Hand and arm signals.

Review:
Fastrope and rappel procedures.

Performance Standards. Demonstrate knowledge and ability to conduct day fastrope/rappelling.

Prerequisite. CAL-211 and EXT-221.

External Syllabus Support. Applicable HIE support equipment.

HIE-362 1.0 O 1 CH-46E A NS

Goal. Introduce NS fastrope and rappel procedures.

Requirement

Discuss:
CRM during NS HIE operations.
NS considerations during NS HIE operations.
Emergency procedures during NS HIE operations.

Introduce:
NS fastrope and rappel procedures.

Review:
Preflight of associated equipment and rigging.
Skills involved for holding an extended hover.
Troop insertion/extraction techniques.

Performance Standards. Demonstrate knowledge and ability to conduct NS fastrope/rappelling.

Prerequisite. HIE-361, EXT-392.

External Syllabus Support. Applicable HIE support equipment.

7. Tactics (TAC) Low and Medium Threat

a. Purpose. To introduce and develop proficiency in the execution of assault support operations in the following mission areas in a low and medium threat environment. Use MCCRES Volume III, Section A, Standards:

(1) Helicopter Assault Operation [MPS 3A.4].

(2) Noncombatant Evacuation Operation (NEO) [MPS 3A.7].

(3) Raid [MPS 3A.8].

(4) Security/Reinforcement [MPS 3A.9].

(5) Reconnaissance Patrol/Reaction Force Operation [3A.10].

(6) Medical Evacuation [MPS 3A.1].

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) [MPS 3A.12].

b. General

(1) CCUI shall attend the mission brief.

(2) Every attempt should be made to expend the required .50 cal rounds. However, this should not restrict the completion of the event.

Squadron ordnance shall mount .50 caliber machine guns for all tactical flights.

(3) CCUI/AGOUI shall be AG qualified prior to beginning this stage.

(4) CCUI/AGOUI shall be NSQ for the light level being flown.

(5) Aircrews shall discuss CRM as applicable to each event.

(6) Enlisted WTIs should be required for initial flights.

c. Crew Requirement. CC/AGO, CC/CCUI, or CC/AGOUI.

d. Ground/Academic Training. Basic Principles of Escort Operations and Tactical Recovery of Aircraft and Personnel (TRAP) as listed in the MAWTS-1 ASP shall be taught by an EWTI prior to starting this stage.

e. Flight Training. (4 Flights, 6.0 Hours).

TAC-371 1.5 O 2+ ACFT A

Goal. Conduct an assault support mission in a low threat scenario using MCCRES standards as a reference for mission planning.

Requirement

Discuss:
- Cabin preparations.
- Passenger brief and safety regulations.
- Ramp and hatch operation.
- Loading/unloading of passengers and/or internal/external cargo.
- Gear storage.
- Helicopter Emergency Egress Lighting System (HEELS).
- Helicopter Emergency Flotation System (HEFS), exit blocking when deployed.
- CRM.
- ICS procedures.
- Lookout doctrine.
- Penetration checklist.

Introduce:
- Aircrew responsibilities during tactical insert/extract of troops and/or cargo.
- Tactical formations and approaches as contained in NWP 3-22.5-CH-46E.

Review:
- A1-H46AE-CLG-000 Cargo Loading Manual.

Performance Standards. Demonstrate the ability to perform crew responsibilities in a day low threat environment.

Prerequisite. CAL-212, TERF qualified, and AG qualified.

Ordnance. 500 rounds .50 cal.

Range requirements. Appropriate aerial gunnery range equipped with multiple scored static/moving targets ranging from personnel to APC size.

External Syllabus Support. Authorized TERF area, CAL site, (live fire range preferred).

TAC-372 1.5 O 2+ ACFT A NS

Goal. Conduct an NS assault support mission in a low threat environment using MCCRES standards as a reference for mission planning.

Requirement

Discuss:
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement as applicable to the mission.
- Tactics used in a low threat environment.

Introduce:
- Aircrew responsibilities during NS tactical insert/extract of troops and/or cargo.

Performance Standards. Demonstrate ability to perform crew responsibilities during NS operations in a low threat environment.

Prerequisite. TAC-371.

Ordnance. 500 rounds .50 cal.

Range requirements. Appropriate Laser authorized aerial gunnery range equipped with multiple scored static/moving targets ranging from personnel to APC size.

External Syllabus Support. Authorized TERF area, CAL site (live fire range preferred).

TAC-374 1.5 O 2+ ACFT A

Goal. Conduct a day assault support mission in a medium threat environment emphasizing MCCRES standards.

Requirement

Discuss:
- CRM during an assault support mission.
- Crew comfort level.
- Flight counter-tactics for air and ground threats.
- ASE utilization.
- Escort considerations.
- Control and terminology for onboard defensive weapons.
- NBC considerations.
- TERF considerations.
- Aerial gunnery procedures.
- EMCON procedures.

Introduce:
Multi-plane aerial gunnery in an objective area/LZ.

Review:
Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Performance Standards. Demonstrate the ability to perform crew responsibilities during day operations in a medium threat environment.

Prerequisite. TAC-371.

Ordnance. 500 rounds .50 cal.

Range requirements. Appropriate aerial gunnery range equipped with multiple scored static/moving targets ranging from personnel to APC size.

External Syllabus Support. TERF area, CAL site, (live fire, EW range preferred).

TAC-375 1.5 R,O 2+ ACFT A NS

Goal. Conduct a NS assault support mission in a medium threat environment emphasizing MCCRES standards.

Requirement

Discuss:
CRM during an assault support mission.
Crew comfort level.
Flight counter-tactics for air and ground threats.
ASE utilization.
Escort considerations.
Control and terminology for onboard defensive weapons.
NBC considerations.
TERF considerations.
Aerial gunnery procedures.

Introduce:
Tactical assault support mission at night using NS.
Escort aircraft utilization if available.
Multi-aircraft NS aerial gunnery in an objective area.

Review:
TAC-374. Emphasize navigation, timing, formation, communication discipline, authentication procedures, escort utilization and weapons control procedures.

Performance Standards. Demonstrate the ability to perform crew responsibilities during NS operations in a medium threat environment.

Prerequisite. TAC-372.

Ordnance. 500 rounds .50 cal.

Range requirements. Appropriate Laser authorized aerial gunnery range equipped with multiple scored static/moving targets ranging from personnel to APC size.

External Syllabus Support. TERF area, CAL site (live fire, EW range preferred).

8. External Cargo Operations (EXT)

a. Purpose. To conduct NS external cargo operations.

b. General. At the completion of this stage the CCUI/AGOUI will be able to conduct NS external operations. EXT-392 requires an ENSI for initial/refresher flight.

c. Crew Requirement CC/AGO, ENSI/CCUI or ENSI/CC/AGOUI.

d. Ground/Academic Training

(1) Read appropriate chapters of the NATOPS Manual.

(2) Read appropriate paragraphs of the Air NTTP 3-22 publications and T/M/S NATOPS.

(3) Read appropriate paragraphs of MCRP 4-11.3E Volumes I and II, Basic Operations and Equipment and Single Point Rigging Procedures.

e. Flight Training. (1 Flight, 1.5 Hours).

EXT-392 1.5 R,O 1 CH-46E A NS

Goal. Introduce and conduct NS External operations.

Requirement

Discuss:
CRM.
Crew comfort levels.
Lost communications.
Low altitude emergencies.
Cargo release procedures.
Cargo hook/pendant illumination.
Depth perception/rate of descent.
HST procedures.
NS procedures/emergencies.
Waveoff.

Introduce:
NS external operations.

Review:
Drift corrections, common terminology, ground relationship, lookout procedures during takeoffs, precision approaches, and deliveries with external cargo while wearing NS.

Performance Standards. While utilizing NS, demonstrate the ability to give commands to the pilot at the controls of the aircraft to effect hookup and delivery the load within 5 meters of intended point of delivery with minimal difficulty

utilizing standard terminology while maintaining obstacle clearance.

Prerequisite. EXT-221 and NS-251. ENSI required if CCUI is not NSQ for appropriate light level.

External Syllabus Support. Single point load (1,000-4,000 pounds preferred), HST, authorized TERF route.

234. CORE PLUS PHASE

1. Tactics (TAC) (High Threat Environment)

a. Purpose. To develop proficiency in tactical execution of assault support operations in the following mission areas in a high threat environment. Use MCCRES Volume III, Section A, Standards:

(1) Helicopter Assault Operation [MPS 3A.4].

(2) Noncombatant Evacuation Operation (NEO) [MPS 3A.7].

(3) Raid [MPS 3A.8].

(4) Security/Reinforcement [MPS 3A.9].

(5) Reconnaissance Patrol/Reaction Force Operation [3A.10].

(6) Medical Evacuation {MPS 3A.1].

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) [MPS 3A.12].

b. General

(1) CCUI shall attend the mission brief.

(2) Every attempt should be made to expend the required .50 cal rounds. However, this should not restrict the completion of the event. Squadron ordnance shall mount .50 caliber machine guns for all tactical flights.

(3) CCUI/AGOUI shall be AG qualified prior to beginning this stage.

(4) CCUI/AGOUI shall be NSQ for the light level being flown.

(5) Aircrews shall discuss CRM as applicable to each event.

c. Crew Requirement. CC/AG, CC/CCUI or CC/AOUI.

d. Ground/Academic Training. Appropriate lectures in the MAWTS-1 Crew Chief ASP.

e. Flight Training. (2 Flights, 3.0 Hours).

TAC-401 1.5 O 2+ ACFT A

Goal. Conduct a day assault support mission in a high threat environment using MCCRES standards. Incorporate AG and EW concepts and skills.

Requirement

Discuss:
CRM/crew comfort level.
ASE operations and secure voice capability.
NBC considerations.
Aerial gunnery procedures.

Introduce:
Secure voice and ASE equipment.
Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Review:
TAC-374.

Performance Standards. Demonstrate knowledge and ability to perform crew responsibilities in a high threat environment.

Prerequisite. TAC-374 and GTR-332.

Ordnance. 500 rounds .50 cal.

Range requirements. Appropriate aerial gunnery range equipped with multiple scored static/moving targets ranging from personnel to APC size.

External Syllabus Support. As available: live fire (HE preferred), Laser capable, FW/RW Escort/CAS assets, EW Emitter, FW/RW Adversaries, Smokey SAMs.

TAC-402 1.5 R,O 2+ ACFT A NS

Goal. Conduct an NS assault support mission in a high threat environment using MCCRES standards.

Discuss:
In addition to the TAC-401 discussion items, discuss NS LLL operational considerations.
Execute a NS LLL mission similar to TAC-401. Mission will be flown at TERF altitudes.
Emphasis on lookout doctrine, navigation, timing, formation, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Introduce:
NS high threat tactics.

Review:
TAC-401.

Performance Standards. Demonstrate knowledge and ability to perform crew responsibilities during NS operations in a high threat environment.

Prerequisite. TAC-401 and TAC-375.

Ordnance. 500 rounds .50 cal.

Range Requirements. Appropriate Laser authorized aerial gunnery range equipped with multiple scored static/moving targets ranging from personnel to APC size.

External Syllabus Support. As available: live fire (HE preferred), Laser capable, FW/RW Escort/CAS assets, EW Emitter, FW/RW Adversaries and Smokey SAMs.

2. Confined Area Landings (CAL)

a. Purpose. To develop crew coordination during unaided confined area operations.

b. General. At the completion of this stage, the CC/AOUI will be able to demonstrate the ability to assist the pilots during unaided CALS.

c. Crew Requirement. CC/AGO, CC/CCUI or CC/AOUI.

d. Ground/Academic Training. None.

e. Flight Training. (1 Flight, 1.5 Hours).

CAL-413 1.5 O 1 CH-46E A N*

Goal. Review night unaided CALs.

Requirement

Discuss:
- CRM.
- Obstacle clearance.
- Common terminology.
- Distance estimation.
- Waveoff/brownout procedures.

Review:
- Lookout doctrine.
- ICS procedures.
- Aircraft clearance and terrain suitability.
- Night operations.
- Aircraft lighting and light discipline.

Performance Standards. Demonstrate aircrew responsibilities during night unaided CALs.

Prerequisite. CAL-211.

External Syllabus Support. CAL zone.

2. External Cargo Operations (EXT)

a. Purpose. To conduct TERF external cargo operations.

b. General. At the completion of this stage the CCUI/AGOUI will be able to conduct TERF external operations. EXT-420 requires an ETERFI for initial/refresher flight.

c. Crew Requirement. EXT-420 CC/AGO, ETERFI/CCUI or ETERFI/AGOUI.

d. Ground/Academic Training: Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight Training. (1 Flights, 1.5 Hours).

EXT-420 1.5 O 1 CH-46E A

Goal. Introduce and conduct external operations in the TERF environment.

Requirement

Discuss:
CRM.
External cargo hook operations/preparation.
Communication procedures.
Cargo jettison procedures.
Emergencies with external cargo.
Waveoff procedures.
ICS procedures.
HST requirements.

Introduce:
External operations in a TERF environment.

Review:
TERF-242.
Cargo Loading Manual, A1-H46AE-CLG-000.

Performance Standards. While in the TERF environment, demonstrate the ability to give commands to the pilot at the controls of the aircraft to effect hookup and delivery the load within 5 meters of intended point of delivery with minimal difficulty utilizing standard terminology while maintaining obstacle clearance.

Prerequisite. EXT-221 and TERF-242.

External Syllabus Support. Load (1,000-4,000 pounds preferred), HST, authorized TERF route.

3. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To develop proficiency with the AR-5 protective assembly during normal and tactical flight operations.

b. General

(1) For the safe execution of initial NBC flights, 1 pilot and 1 aircrewman shall remain unmasked. On subsequent flights, all aircrew may remain masked.

(2) Initial NBC-431 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

(3) Aircrew shall be NSQ HLL.

(4) ENSI required for all initial NS instructional flights.

(5) If flown during LLL conditions, aircrew shall be NSQ.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Ground/Academic Training

(1) Discuss and review NBC information contained in NWP 3-22.5-CH-46E.

(2) Discuss AR-5 hookup and operating procedures in the aircraft.

(3) Egress drills with full NBC protective equipment simulating both overland and overwater emergencies shall be completed prior to NBC instructional flights.

e. Flight Training. (2 Flights, 2.0 Hours).

NBC-431 1.0 R 1 CH-46E A

Goal. Conduct normal flight operations in a simulated NBC environment.

Requirement

Discuss:
- Aircrew protective ensemble.
- Nuclear effects to aircraft and aircrew.
- Chemical and Biological agents, their effects and aircrew protective measures.
- Decontamination considerations.
- CRM in a NBC environment, to include emergency procedures.
- Operation, capabilities and limitations of protective masks.
- Physiological limitations and fatigue factors imposed by NBC protective equipment.
- Heliborne operations in a NBC environment.

Introduce:
- With NAVAIR approved NBC mask donned:
  - Start/taxi while masked.
  - Takeoff/landing while masked.
  - Straight & level flight while masked.
  - Hovering while masked.
  - CALs while masked.

Review:
- Donning, adjustments, and doffing of the NAVAIR approved NBC mask.

Performance Standards. Demonstrate the ability to perform crew responsibilities in a NBC environment.

Prerequisite. CAL-211.

External Syllabus Support. CAL site.

NBC-432 1.0 1 CH-46E A NS

Goal. Conduct NS flight operations in a simulated NBC environment.

Requirement

Discuss:
CRM.

Limitations of mask pertaining to flight scan and visual acuity.
Limitations and fatigue factors imposed by NBC protective equipment.
Proper mask maintenance and factors which render the mask unserviceable.
Limitations of NS caused by mask affecting scan and visual acuity.
Limitations and fatigue factors imposed by NBC protective equipment and NS.

Introduce:
With NAVAIR approved NBC mask and NS donned:
Start/taxi while masked and wearing NS.
Takeoff/landings while masked and wearing NS.
Straight & level flight while masked and wearing NS.
Hovering while masked and wearing NS.
CALs while masked and wearing NS.

Review:
Proper use of the NAVAIR approved NBC mask (donning and removing on the ground and in the air).

Performance Standards. Demonstrate knowledge and ability to perform NS NBC operations.

Prerequisite. NS-257 and NBC-431.

External Syllabus Support. CAL site.

4. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to evade enemy air-to-air threats.

b. General

(1) After successful completion of DM-441/442 the CCUI/AGOUI is DM qualified. A qualification letter signed by the commanding officer stating the aircrew is DMQ is required to be placed in the aircrew APR and NATOPS jacket with appropriate logbook entry.

(2) Aircrews shall not conduct DM training unless the following requirements are met:

(a) A proficient EDMI is present in the aircraft for all initial flights.

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the Air NTTP 3-22 publications.

(c) The flight lead briefs any aggressor aircrew per T&R Program Manual, and covers training rules prior to each flight.

(d) EDMI shall not have lookout responsibility during DM training.

(3) For helicopter versus helicopter DM, the aggressor aircraft shall be a non-assault helicopter.

(4) .50 caliber machine guns shall be mounted for all DM flights.

(5) Prerequisites:

(a) TERF qualified.

(b) FORM-231.

c. Crew Requirement. CC/AGO, EDMI/CCUI/AGO, EDMI/CC/AGOUI, EDMI/CCUI/CCUI or EDMI/AGOUI/AGOUI.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight Event Training (2 Flights, 3.0 Hours)

DM-441 1.5 R 2 CH-46E A VS 1 RW AGGRESSOR

Goal. Introduce DM against a RW aggressor.

Requirement

Discuss:
CRM/Inter-flight coordination.
Crew comfort level.
Lookout doctrine.
Common terminology.
Situational Awareness.
DM training rules.
Closure rate, radius of turn, and energy state.
RW weapons parameters and considerations.
Use of ALE-39/47, APR-39, ALQ-157, and AAR-47.
Use of onboard weapons.
DM against RW aggressor.
Inter/intra aircraft communication.

Introduce:
Helicopter versus helicopter DM with an aggressor helicopter per the MAWTS-1 Helicopter DM Guide.

Review:
Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Aircrew shall meet learning objectives as established by Air NTTP 3-22 publications, demonstrate effective maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra aircraft communication, understanding of mutual supportability, recognize closure rate, , maintain energy state, utilize proper terminology, utilize effective 360 degree lookout doctrine, demonstrate proper threat calls, proper utilization of onboard defensive systems, understanding

of threat weapons capabilities and appropriate flight response.

Prerequisite. Stage Prerequisites, GTR-332.

Ordnance. 20 chaff and 40 flares.

External Syllabus Support. Range (TACTS optional), RW adversary (RW platform capable of fwd firing ordnance).

DM-442 1.5 R 2 CH-46E A VS 1 FW AGGRESSOR

Goal. Introduce DM against a FW aggressor.

Requirement

Discuss:
- CRM/inter flight coordination.
- Crew comfort level.
- Lookout doctrine.
- Common terminology.
- Situational awareness.
- DM training rules.
- Closure rate, radius of turn, and energy state.
- FW weapons parameters and considerations.
- Use of ALE-39/47, APR-39, ALQ-157, and AAR-47.
- Use of onboard weapons.
- DM against FW aggressor.
- Inter/intra aircraft communication.

Introduce:
- Helicopter versus FW DM per the MAWTS-1 Helicopter DM Guide.

Performance Standards. Aircrew shall meet learning objectives as established by Air NTTP 3-22 publications, demonstrate effective maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra aircraft communication, understanding of mutual supportability, recognize closure rate, , maintain energy state, utilize proper terminology, utilize effective 360 degree lookout doctrine, demonstrate proper threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. Stage Prerequisites, GTR-332.

Ordnance. 20 chaff and 40 flares.

External Syllabus Support. Special use airspace preferred.

5. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. General. All aircrew shall be NSQ for the appropriate light level being flown.

c. Crew Requirement. MAT-450 requires CC or CC/CCUI. MAT-451 requires CC/AO, CC/CCUI or CCAOUI.

d. Academic Training. Refer to appropriate chapters in the NATOPS Manual for discussion of mountain landing zone characteristics.

e. Flight Training. (2 Flights, 3.0 Hours).

MAT-450 1.5 R,O 2 CH-46E A

Goal. Introduce section aircraft operations in mountainous terrain.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Communication/standard terminology.
- Multi-aircraft operations.
- Lookout doctrine.
- Landing site evaluation/terrain suitability.
- Effects of high altitude on aircraft performance.
- Emergency procedures.

Introduce:
- Section operations in mountainous terrain.
- Section CALs in mountainous terrain.

Review:
- CAL-212 and MAT-351.

Performance Standards. Demonstrate the ability to conduct section landings in mountainous terrain.

Prerequisite. CAL-212 and MAT-351.

External Syllabus Support. Range that supports MAT.

MAT-451 1.5 R, O 1 CH-46E A NS

Goal. Introduce NS mountainous area operations.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Communication/common terminology.
- Landing site evaluation/terrain suitability.
- Emergencies (aircraft and NS).
- NS failures.
- NS navigation techniques.

Introduce:
- NS mountainous terrain operations.
- NS CALs in mountainous areas.

Review:
NS-251.

Performance Standards. Demonstrate ability to conduct NS MAT.

Prerequisite. NS-251 and MAT-351.

External Syllabus Support. Range that supports MAT.

6. Helicopter Insertion/Extraction (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, HRST Master, and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of paraops and cargo drops. The crew chief shall preflight aircraft rigging.

(3) ICS cranials and gunner's belts are required for all HIE events.

(4) CCUI/AGOUI shall be NSQ for the light level being flown.

(5) An ENSI is required for initial/refresher NS flights.

c. Crew Requirement

(1) HIE-460, 462, and 463 require CC or CC/CCUI.

(2) HIE-461 requires CC/AO, ENSI/CCUI or ENSI/AGOUI if flown on NS.

d. Ground/Academic Training

(1) Review Air NTTP 3-22 publications and applicable Force Orders/SOPs.

(2) Review NWP 19-1 series for rescue procedures and MCO 3130 series for Category B SAR Unit procedures.

(3) Applicable courses from the MAWTS-1 Course Catalog.

e. Flight Training. (4 Flights, 4.0 Hours).

HIE-460 1.0 R, O 1 CH-46E A (NS)

Goal. Introduce SPIE rig operations.

Requirement

Discuss:
HIGE/HOGE requirements.
CRM (pilots, crew chief, HRST Master, and HRST Safety Observer brief together).
ICS procedures and standard terminology.
ICS failure/hand and arm signals.
Current Force Order/Wing SOP.
Emergency procedures.

Obstacle clearance/waveoff.
Lookout doctrine.
SPIE from water.

Introduce:
Inspection of the SPIE rig.
Tactical troop insert/extract via SPIE.
Review:
SPIE rig procedures.

Performance Standards. Demonstrate ability and knowledge to conduct day SPIE operations.

Prerequisite. EXT-221.

External Syllabus Support. Applicable HIE support equipment, HRST and Safety Observers.

HIE-461 1.0 R, O 1 CH-46E A (NS)

Goal. Introduce day or NS aerial delivery procedures.

Requirement

Discuss:
CRM (pilot, copilot, crew chief, and Jump Master/Cast Master brief together).
Voice communication/standard terminology during aerial deliveries.
Tactical considerations for aerial delivery of troops/cargo.
Proper rigging and preflight of equipment to be inserted by aerial delivery.
Paraop procedures.
Sensor drop procedures.
ICS procedures.
Emergency procedures.
Movement within aircraft cabin.

Introduce:
Paraop or sensor drop operations.

Review:
Paraop or sensor drop procedures.

Performance Standards. Demonstrate the ability to conduct aerial delivery.

External Syllabus Support. Certified DZ, Jumpmaster and Safety Observers.

HIE-462 1.0 R, O 1 CH-46E A (NS)

Goal. Introduce helocast/soft duck procedures.

Requirement

Discuss:
CRM.
Crew comfort levels.

Waterfall effect.
Salt encrustation.
Ditching procedures.
Helicopter Emergency Flotation System (HEFS).
Ditching/water landing.

Introduce:
Helocasting/soft duck procedures.
Preflight of aircraft, troops and equipment for helo cast or soft duck.

Review:
Overwater emergency procedures.
Helocasting/soft duck progress.

Performance Standards. Demonstrate ability to conduct helocast/soft duck operations.

External Syllabus Support. Castmaster and Safety Observers.

HIE-463 1.0 R, O 1 CH-46E A (NS)

Goal. Introduce hoist and rescue procedures.

Requirement

Discuss:
CRM.
Crew comfort levels.
Waterfall effect.
Salt encrustation.
Ditching procedures.
HEFS.
SAR equipment.
Emergency procedures.
Cable entanglements.

Introduce:
Rescue procedures.
Internal winch/external hoist rigging.
Hoist procedures for hatch and hell hole.
Use of rescue strop, jungle penetrator, and stokes litter.
Emergency procedures including use of Chicago grip, quick splice, and cable cutters.

Review:
Overwater emergency procedures.
SAR procedures and facilities.

Performance Standards. Demonstrate knowledge and ability to conduct hoisting operations.

Prerequisite. EXT-221.

External Syllabus Support. Operational jungle penetrator or SAR basket (as available).

7. Aircraft Procedures Familiarization

a. Purpose. To familiarize the crew chief with cockpit emergency procedures, switches and CNCS operation.

b. General

(1) Refer to NATOPS for emergency procedures and CNCS operation.

(2) Pilots may sign off the initial crew chief ATF on this code only.

c. Crew Requirement. HAC/crew chief.

d. Ground/Academic Training. Review appropriate chapters of the NATOPS.

e. Simulator training. (1 event, 1.5 Hours).

SFAM-470 1.5 R, O WST S

Goal. To better assist the pilots during aircraft emergency and multi-task situations.

Requirement

Discuss:
CNCS operation and programming procedures.
Pilot emergency procedures.
Cockpit procedures.
Aircraft systems procedures.
Aircraft flight characteristics.

Introduce:
Pilot emergency procedures.
CNCS operation and procedures.

Review:
Pilot emergency procedures and ASE.

Performance Standards. The crew chief shall demonstrate the ability to assist pilots during emergency procedures, CNCS operation and ASE operation.

External Syllabus Support. WST/AST.

8. Tail Gunnery (TG)

a. Purpose. To conduct aerial gunnery training utilizing the M240 7.62mm machine gun from the ramp.

b. General

(1) Individuals successfully completing TG-481 and TG-482 may be issued a TG Qualification letter from the commanding officer.

(2) Unqualified individuals [Tail Gunners Under Instruction (TGUI)] shall be supervised by a TGI.

(3) Individuals shall be NSQ for the appropriate light level condition. AG Qualification is a prerequisite for TG-481.

(4) Laser aiming devices are required for TG-482.

(5) Tail gunnery introductory lectures and initial instructional flights shall be conducted by a TGI.

(6) Completion of the entire AG course cannot be waived or deferred.

c. Crew Requirement. TG-481 CC/TG or CC/TGUI/TG; TG-482 CC/AGO/TG or CC/AGO/TGUI/TGI.

d. Ground/Academic Training. Utilize the academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight Training. (2 Flights, 3.0 Hours).

TG-481 1.5 R 1 CH-46E A

Goal. Introduce/practice tail gunnery utilizing the M240 7.62mm machine gun from the ramp to provide rear defensive fires.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Emergency egress procedures.
- Section tactics.

Introduce/practice:
- Tail gunnery employment techniques.
- Firing on pre-briefed targets from the ramp.

Review: All previous aerial gunnery work.

Performance Standards. Demonstrate knowledge of the cycle of operation, nomenclature, employment of the M240 7.62mm machine gun while fired from the ramp. Demonstrate the ability to engage pre-briefed targets.

Prerequisites. AG qualification (AGQ).

Ordnance. 500 rounds 7.62mm.

External Syllabus Support. Authorized aerial gunnery range.

TG-482 1.5 R 1 CH-46E A NS

Goal. Introduce/practice NS tail gunnery utilizing the M240 7.62mm machine gun from the ramp to provide rear defensive fires.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Emergency egress procedures.
- Laser aiming devices/procedures.
- NS operations and emergency procedures.
- Section tactics.

Introduce/practice:
- NS tail gunnery weapons employment techniques.
- Firing on pre-briefed targets from the ramp.

Review:
- Previous aerial gunnery syllabus.

Performance Standards. Demonstrate knowledge of the cycle of operation, nomenclature, employment of the M240 7.62mm machine gun while fired from the ramp. Demonstrate the ability to engage pre-briefed targets while utilizing NS and laser aiming devices.

Prerequisites. TG-481.

Ordnance. 500 rounds 7.62mm, laser aiming device.

External Syllabus Support. LASER authorized aerial gunnery range.

9. Carrier Qualification (CQ)

a. Purpose. To introduce/refresh the CC/AGO in unaided shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) Night CQ Requirements

(a) Requirements for initial/Refresher/delinquent qualification are:

1 Five day CQs.

2 Five night unaided CQs.

(b) CC/AGOs CQ-491 proficient per paragraph (2) (a) above shall complete the following to maintain proficiency:

1 Two day CQs.

2 Two night unaided CQs.

(3) CQ-301 shall be flown under HLL conditions for initial qualification. ENSI required for initial NS flights. Currency and re-qualification flights may be flown under any light level condition.

(4) CC/AGO is CQ on completion of CQ-300, CQ-301.

(5) CC/AGO is authorized to carry passengers during daylight hours when proficient in CQ-300.

(6) CC/AGO is authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491 IAW MCO P3500.14.

(7) CC/AGO shall discuss CRM as applicable to each event.

c. Crew requirements. CC, CC/CCUI.

d. Ground/Academic Training. Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

e. Flight Training. (2 Flights, 2.0 Hours).

CQ-490 1.0 O 1 CH-46E A N*

Goal. Conduct night unaided FCLPs.

Requirement

Discuss
- CRM.
- Communications.
- LSE signals.
- NS procedures/operations.
- Aircraft lighting.
- Shipboard lighting.
- Wave off.
- Crew comfort levels.
- Lookout Doctrine.

Introduce:
- Night unaided FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review:
- CQ-291.

Performance Standards. Demonstrate the ability/knowledge to perform unaided shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CQ-291.

External Syllabus Support. Approved FCLP pad.

CQ-491 1.0 R,O 1 CH-46E A N*

Goal. Conduct night unaided CQs.

Requirement

Discuss:
CRM during shipboard landings.
Communications used during shipboard landings.
LSE signals.
Water landings/ditching.
Aircraft lighting used during shipboard landings.
Rotor engagement/disengagement.
Launch/recovery wind envelopes.
LSE signals.

Introduce:
Unaided CQ operations.

Review:
CQ-291 and CQ-300.

Performance Standards Demonstrate the ability/knowledge to perform unaided shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CQ-490 and CQ-300.

External Syllabus Support. CQ capable ship.

240. INSTRUCTOR TRAINING

1. Crew Chief Instructor Under Training (CCIUT)

a. Purpose. To standardize procedures for qualifying syllabus instructors within the Marine Enlisted Aircrew Training Department (MEAT).

b. General

(1) The CCIUT must demonstrate proficiency in instructing all evolutions in this stage.

(2) CCIUT events 500 through 511 shall be complete prior to being designated a Marine Enlisted Aircrew Training Instructor (MEAT Instructor).

(3) Upon completion of the STANX-511 and designation by the commanding officer, the MEAT Instructor is capable of instructing all Core Skill Introduction phase events to include TERF and NS events.

(4) The CC IUT shall have completed the requirements for designation as Night Systems FAM Instructor (NSFI) and TERFI per MAWTS-1 Course Catalog.

(5) Prerequisite: TERF/NSQ.

c. Crew Requirements. CCI/CCIUT.

d. Ground/Academic Training. CCIUT will complete the MEAT ground training syllabus and the Basic Instructor course prior to flying or teaching any syllabus events.

e. Flight Training. (9 Flights, 15 hours).

FAM-500 1.5 E 1 CH-46E A

Goal. Demonstrate crew chief responsibilities and instructional techniques during familiarization flight.

Requirement

Demonstrate instructional techniques of crew chief responsibilities during a Familiarization flight.

Discuss:
- CRM.
- Course Rules

Performance Standards. The CCIUT will conform to instructional techniques set forth by the MEAT for all FAM maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisites. Appropriate FRS lesson.

FAM-501 1.5 E 1 CH-46E A N*

Goal. Introduce night operations.

Requirement

Discuss:
- Lighting systems.
- Night operations.
- Estimating distances.
- CRM.
  - Adaptability/flexibility.
  - Decision making.

Introduce:
- Daily at night.
- Turnaround at night.
- Light discipline.
- Aircraft lighting.
- Airfield lighting.
- Night lookout doctrine.

Review:
- Night precautionary Landings.
- Night emergency landings.
- Overview of duties.
- SA.
- Night startup/shutdown procedures.
- Limitations.
- Hot seat procedures.

Performance Standards. Demonstrate CCI responsibilities and instructional techniques during night unaided operations IAW NATOPS.

Prerequisite. FAM-500.

NAV-502 1.5 E 1 CH-46E (N)

Goal. Demonstrate crew chief responsibilities and Navigational instructional techniques.

Requirement

Discuss:
- Navigation and identifying positions using charts and maps.

Review:
- CRM.
- Lost plane procedures.
- Time/distance checks.
- Distance information and map legend information.
- Techniques of instruction.

Performance Standards. Demonstrate proper CCI techniques and responsibilities for all NAV Procedures per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS lesson.

CAL-503 1.5 E 1 CH-46E A

Goal. Demonstrate CCI responsibilities and instructional techniques during confined area landings (CALs).

Requirement

Discuss:
- Limitations for slope landings.
- Clearance in confined area landings.
- Wave off.
- CRM.
  - Situational Awareness.
  - Assertiveness.
- Emergency procedures.

Review:
- Standard terminology.
- Engine failures in flight.

Performance Standards. Demonstrate proper CCI techniques andresponsibilities during confined area landing maneuvers per the FRS Standardization Manual and Natops Manual.

Prerequisite. Appropriate FRS lesson.

FORM-504 1.5 E 1 CH-46E A

Goal. Demonstrate CCI responsibilities and instructional techniques used during formation flight operations.

Requirement

Discuss:
- Lookout doctrine.
- Section CALs
- Formation maneuvers.

Review:
- Standard terminology.
- CALs.
- CRM.
- Emergencies Procedures.

Performance Standards. Demonstrate proper CCI techniques and responsibilities used during formation flight operations per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS lesson.

TERF-505 1.5 E 1 CH-46E A

Goal. Demonstrate CCI responsibilities and instructional techniques during terrain flight maneuvers(TERF).

Requirement

Discuss:
- Obstacle clearance.
- Standard terminology.
- Crew comfort levels.
- Wave off.
- Clearance in confined areas.
- Emergencies during low level operations.
- CRM.
  - Assertiveness.
  - Communication.

Introduce:
- Blade walk.
- Hover check theory.
- TERF maneuvers.
  - Bunts.
  - Rolls.
  - Masking and unmasking.
  - Spiral approach.
  - Low level quick stop.
  - Zoom climb.

Review:
- Crew responsibilities.
- Clearance calls.

Performance Standards. Demonstrate a basic understanding of TERF maneuvers.

Prerequisite. ACAD-022,FAM-116.

External Syllabus Support. Low level TERF area in controlled airspace.

EXT-506 1.5 E 1 CH-46E A

Goal. Demonstrate crew chief responsibilities and instructional techniques during external cargo procedures.

Requirement

Discuss:
- Static discharge precautions.
- Lost communications.
- Hand signals.
- Emergency release procedures.
- Inspection of cargo hook and pendant.

Review:
- External operations.
- Cargo hook procedures.
- Techniques of instruction

Performance Standards. CCI will conform to instructional techniques set forth by the FRS for all EXT Procedures per the FRS Standardization Manual and Natops Manual.

Prerequisite. Appropriate FRS lesson.

External Syllabus Support. HST, external load, pendant and hook.

NS-507 1.5 E 1 CH-46E A NS

Goal. Demonstrate CCI responsibilities and instructional techniques used during night vision device operations.

Requirement

Discuss:
- Crew comfort levels.
- NS failures.
- Depth perception.
- Aircraft lighting.
- Emergency procedures.
- CRM.
  - Mission analysis.
  - Assertiveness.

Introduce:
- Use of NS during low level operations.
- Aircraft configuration.
- Taxiing on NS.
- Use of NS at an unlit field.

Ground relationships.

Review:
Communication.
Lookout doctrine.
Night startup/shutdown.
Aircraft lighting.
Taxiing signals.
Light discipline.
Crew duties.
Vertigo.

Performance Standards. Apply basic NS skills as outlined in the MAWTS-1 NVD manual.

Prerequisite. Completion of NITE Lab and FAM-505.

IUT-511 3.0 1 CH-46E (N)

Goal. CC standardization check.

Requirement

Discuss:
CCUI duties/responsibilities.
Standard terminology.
External operations.
CALs.
CRM.
Emergency procedures.
Instructional techniques.

Review:
Applicable 100 series codes.

Performance Standards. Demonstrate standard CCI procedures, techniques and responsibilities per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. FAM-500, FAM-501, NAV-502, CAL-503, FORM-504, TERF-505, EXT-506, NS-507.

External Syllabus Support. As required.

250. REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS

1. NATOPS Training/Evaluation

a. Purpose. To complete the annual NATOPS requirement.

b. General

(1) This is an annual flight requirement as listed in OPNAVINST 3710.7 and A1-H46AE-NFM-000 (CH-46 NATOPS Manual).

(2) This flight code will not provide a CRP value and will be used primarily to assist in management and tracking annual NATOPS evaluations.

(3) The evaluating crew chief shall be a designated NATOPS Evaluator/Assistant NATOPS instructor.

c. Crew Requirements. CC/CC or CC/AGO.

d. Ground/Academic Training. None.

e. Flight Training. (1 Flight, 1.5 Hours).

RQD-600 1.5 R,O E 1 CH-46E A (N)

Goal. CC/AGO annual NATOPS evaluation.

Requirement. Evaluate proficiency using all aspects of the CH-46E as a weapons system. The proficiency expected by the evaluator in this flight shall be commensurate with the experience of the CC or AGO being evaluated.

Discuss:
All emergency procedures and Standardization Manual maneuvers.

Performance Standards. The performance expected by the evaluator in this flight shall be commensurate with the experience of the aircrew under evaluation.

Prerequisite. Completion of the open and closed book NATOPS examinations.

251. GRADUATE LEVEL COURSES

1. There are seven graduate level courses that qualify crew chief instructors for specific portions of the T&R syllabus. These courses are as follows:

a. Enlisted Weapons and Tactics Instructor (EWTI Sec MOS 6177).

b. Enlisted Terrain Flight Instructor (ETERFI).

c. Enlisted Night Systems FAM Instructor (ENSFI).

d. Enlisted Night Systems Instructor (ENSI).

e. Enlisted Defensive Measures Instructor (EDMI).

f. Aerial Gunner Instructor (AGI).

g. Enlisted Night Systems SAR Instructor (ENSSI).

h. Crew Chief Instructor (CCI) (FRS only).

2. The above courses and applicable training codes are listed in the current MAWTS-1 Course Catalog or this order. There will be no refly factors for these instructor flights. T&R syllabus currency in stages is considered sufficient to maintain currency as an instructor. EWTIs are only qualified at the Weapons and Tactics Instructor course conducted at MAWTS-1 during WTI.

252. SPECIAL TRAINING. This category is designed for aircrew to develop proficiency in flight procedures and techniques involving special training requirements. Due to the special equipment and logistical support, facilities or supporting units required to conduct special training flights,

squadrons may complete these flights as appropriate support becomes available and mission requirements dictate.

1. Arctic Weather Training (AWT)

a. Purpose. To teach the fundamentals of and/or develop proficiency in any aspect of flying in cold weather with snow on the ground.

b. General

(1) Ambient air temperatures will normally be 10 degrees or below Fahrenheit with snow on the ground. Aircrew must note that cold dry conditions with blowing snow will significantly increase the difficulty of arctic weather flight.

(2) Aircrew shall be NSQ for all NS flights.

c. Crew Requirement. CC (AO if NS are used).

d. Ground/Academic Training

(1) Environmental factors.

(2) Arctic weather survival.

(3) Arctic weather physiology/psychology.

e. Flight Training. (1 Flight, 2.0 Hours).

AWT-621	2.0	1 CH-46E A (N)

Goal. Introduce helicopter operations in a cold weather environment.

Requirement

Discuss:
- Cold dry conditions.
- Blowing snow.
- White-out conditions.
- Aircraft cold weather limitations.
- Aircraft anti-ice.
- Icing.

Introduce:
- Snow landing techniques.

Review:
- NATOPS.

Performance Standards. Demonstrate ability to conduct aircraft operations in a cold weather environment.

Prerequisite. CAL-211.

External Syllabus Support. Snow on the ground.

2. Desert Operations (DES)

a. Purpose. To develop proficiency in aspects of flying in a dusty, high temperature, high density altitude, desert environment.

b. Crew Requirement. CC (AO if NS are used).

c. Ground/Academic Training

(1) Environmental factors (weather, desert conditions).

(2) Desert weather survival.

(3) Desert weather physiology/psychology.

(4) Desert weather clothing and equipment.

d. Flight Training. (1 Flight, 2.0 Hours).

DES-622 2.0 1 CH-46E A (N)

Goal. Introduce helicopter operations in a desert environment.

Requirement

Discuss:
Blowing sand.
Brownout conditions.
Aircraft hot weather performance limitations.

Introduce:
Desert landing techniques.

Review:
NATOPS.

Performance Standards. Demonstrate ability to conduct aircraft operations in a desert environment.

Prerequisite. CAL-211.

External Syllabus Support. Desert environment.

3. Water Landings (WTR)

a. Purpose. To develop the skills necessary to perform water landings.

b. General. Practice water landings shall be made in a fresh water environment.

c. Crew Requirement. CC.

d. Flight Training. (1 Flight, 1.0 Hour).

WTR-623 1.0 1 CH-46E A

Goal. Assist the pilot with executing a water landing.

Requirement

Discuss:
CRM requirements for water landings.
Water landing checklist.
Waterfall effect and salt encrustation.
Rescue with the side door down procedures and limitations.
Inadvertent HEFS deployment.
Ditching.

Introduce:
Water taxi.
Vertical water takeoff.
Vertical water landing.
Running water takeoff.
Running water landing.

Review:
Overwater rescue hoist operations.

Performance Standards. Demonstrate the ability to conduct water landings.

Prerequisite. CAL-211.

External Syllabus Support. Authorized fresh water landing area.

4. Functional Check Flight (FCF)

a. Purpose. To obtain an FCF designation.

b. General. Conduct the full range of FCF procedures to include ECCS engine set-ups.

c. Crew Requirements. CC.

d. Ground/Academic Training. NATOPS Chapter 10, Functional Check Flight checklist, squadron SOP for maintenance flights, and 4790 parameters and requirements.

e. Flight and Simulator Event Training. (1 Event, 2.0 Hours)

FCF-630 2.0 R,E 1 CH-46E A

Goal. Functional Check Flight designation.

Requirement. Effectively demonstrate the ability to perform a full card Functional Check Flight. Do not log code until crew chief is able to perform all facets of a FCF.

Discuss:
Maintenance test procedures.
Troubleshooting techniques.
Squadron SOP for maintenance flights.
Applicable MIMS.
Engine test set.
Rotor track and balance test set.
Vibration test set.

PMS/ECCS, and engine adjustments.
Strobex weight, cord weight, trim tab and pitch-link adjustments.

Review:
NATOPS Chapter 10, Functional Check Flight Checklist.

Performance Standards. Crew chiefs shall be familiar with the FCF test card, and demonstrate the ability to operate all test equipment and make all engine, RTB/Vib adjustments, and troubleshoot common aircraft/test equipment problems.

Prerequisite. Squadron FCF syllabus.

5. CRM Training

a. Purpose. To conduct annual CRM Training.

b. Crew Requirement. CC/(AO if NS are used).

c. Flight Training. (1 Flight, 2.0 Hours).

CRM-640 2.0 R 1 CH-46E A (N)

Goal. Practice/review CRM principles presented in the CH-46E CRM Training Course while executing a simulated mission scenario.

Requirement

Discuss:
Decision making.
Assertiveness.
Mission analysis.
Communication.
Leadership.
Adaptability/flexibility.
SA.

Evaluate:
Decision making.
Assertiveness.
Mission analysis.
Communication.
Leadership.
Adaptability/flexibility.
SA.

Emergencies: Perform as required to evaluate the above skills.

Prerequisite. Completion of the CH-46E CRM course.

253. QUALIFICATION AND DESIGNATION TRACKING. The purpose of this section is to establish training codes to track qualifications, designations, and instructor and flight leadership proficiency. The listed training codes shall not have any associated flight hour requirement or CRP.

1. Qualifications

a. Purpose. To establish training codes in order to track qualifications.

b. General

(1) Qualification training codes (QUAL) shall not have any associated flight time requirement or CRP. Qualification training codes can be logged on the effective date of a qualification and should be a one-time occurrence unless the qualification is lost. If a qualification is lost, the previously logged qualification code should be removed and subsequently re-entered upon becoming re-qualified.

(2) Prerequisites. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

c. Crew Requirement. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

d. Ground Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training. None.

QUAL-650 Goal. Tracking for TERF Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as TERF Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. TERF Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-651 Goal. Tracking for NS HLL Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as NS HLL Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. NS HLL Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-652 Goal. Tracking for AG Qualification (EAC).

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as AG Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. AG Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-653 Goal. Tracking for CQ Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as CQ Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. CQ Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-654 Goal. Tracking for NS LLL Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as NS LLL Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. NS LLL Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-655 Goal. Tracking for DM Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as DM Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. DM Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-656 Goal. Tracking for TG Qualification (EAC).

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as TG Qualified shall be placed in the NATOPS jacket and APR.

Prerequisite. TG Qualified IAW MCO P3500.14 and MCO P3500.50.

QUAL-657

Goal. Tracking for FRS TERFQ Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as FRS TERFQ shall be placed in the NATOPS jacket and APR.

Prerequisite. FRS TERFQ IAW MCO P3500.14 and MCO P3500.50.

QUAL-658

Goal. Tracking for FRS NSQ Qualification.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as FRS NSQ shall be placed in the NATOPS jacket and APR.

Prerequisite. FRS NSQ IAW MCO P3500.14 and MCO P3500.50.

2. Designations

a. Purpose. To establish training codes in order to track instructor and flight leadership designations.

b. General

(1) Designation training codes for instructors (IDESIG) and flight leadership (DESIG) shall not have any associated flight time requirements or CRP. Designation training codes shall be logged for each event in which the individual acts in the capacity of the associated designation (IDESIG-660: instructing a TERFI required event; DESIG-670: leading a section). Effective use of these training codes will facilitate accurate tracking of instructor and flight leadership proficiency at the squadron level.

(2) Prerequisites. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

c. Crew Requirement. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

d. Ground Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

IDESIG-660 Goal. Tracking for TERFI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as TERFI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the TERFI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-661 Goal. Tracking for DMI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as DMI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the DMI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-662 Goal. Tracking for NSFI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as NSFI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the NSFI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-663 Goal. Tracking for NSI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as NSI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the NSI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-664 Goal. Tracking for AGI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as AGI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the AGI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-665 Goal. Tracking for TGI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as TGI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the TGI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-666 Goal. Tracking for WTI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as WTI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the WTI syllabus IAW MCO P3500.12, MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-667 Goal. Tracking for NSSI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as NSSI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the NSSI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

IDESIG-668 Goal. Tracking for FRSI designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter designating the individual as FRSI shall be placed in the NATOPS jacket and APR.

Prerequisite. Successful completion of the FRSI syllabus IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog.

DESIG-674 Goal. Tracking for FCF designation/proficiency.

Requirement. At the discretion of the squadron commanding officer a letter assigning the individual as FCF designated shall be placed in the NATOPS jacket and APR.

Prerequisite. FCF designated IAW MCO P3500.14, MCO P3500.50, OPNAVINST 4790, and Squadron SOPs.

254. GROUND TRAINING/ACADEMIC TRACKING. The purpose of this section is to establish training codes (ACAD-700 through ACAD-899) to track the completion of ground training/academic requirements IAW MCO P3500.14, MCO P3500.50, and the MAWTS-1 Course Catalog. The listed training codes shall not have any associated flight hour requirement or CRP.

1. Ground/Academic Training

a. Purpose. To establish training codes in order to track ground training/academic requirements.

b. General

(1) Ground training/academic training codes (ACAD) shall not have any associated flight time requirements or CRP. Ground training/academic training codes shall be logged each time the requirement is completed.

(2) THIS STAGE WILL BE COMPLETED AT A LATER DATE FOLLOWING THE REVISION AND UPDATE OF THE MAWTS-1 COURSE CATALOG.

(3) Prerequisites. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

c. Crew Requirement. N/A.

d. Ground Training. IAW MCO P3500.14, MCO P3500.50, and MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training. N/A.

260. ORDNANCE REQUIREMENTS. Requirements are based on a single aircrew basis per OPNAVNOTE 8010.

ORDNANCE	100 SERIES	200 SERIES	300 SERIES	400 SERIES	REFRESHER	IUT	*ANNUAL
.50 cal	0	1,500	3,500	1,000	4,000	2,000	4,000
7.62 mm	0	0	0	1,000	1,000	1,500	1,000

*Annual Ordnance requirements maintain aircrew member proficiency.

270. MOS SYLLABUS MATRIX. These tables display specific 100 – 600 level event information such as; flight/simulator hours, refly interval, prerequisites, CRP, chaining, etc. in a table format.

CH-46E CREW CHIEF / AERIAL OBSERVER														
100 SERIES CORE SKILL INTRODUCTION														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INTVL	DEVICE	# OF A/C	ENVIRMNT	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	EVENT CONV
FAM														
FAM	109	2.0		*	A	1	D				4.0		START	109
FAM	110	2.0		*	A	1	D	109	O		4.0		CC DUTIES	110
FAM	111	2.0		*	A	1	D	110			4.0		REV FAM	
FAM	116	1.5		*	A	1	D	111			4.0		AIRCRAFT PROCEEDURES	116
FAM	117	1.5		*	A	1	N	116	O		4.0		NIGHT FAM	117
											20.0			
NAV														
NAV	131	1.5		*	A	1	(N)	110			4.0		DAY NAV	130
											4.0			
CAL														
CAL	141	1.5		*	A	1	D	116			4.0		DAY CAL	141
											4.0			
FORM														
FORM	151	1.5		*	A	2	D	141	O		4.0		DAY FORM CRUISE	151
											4.0			
EXT														
EXT	161	1.5		*	A	1	D	116	O		4.0		EXT	161
											4.0			
TERF														
TERF	171	1.5		*	A	1	D	116	O		4.0		TERF	171
											4.O			
NS														
NS	181	1.5		*	A	1	NS	NITE LAB 117	O		4.0		NS FAM	119
NS	182	1.5		*	A	1	NS	181,131	O		4.0		NS NAV	133
NS	183	1.5		*	A	1	NS	117,141	O		4.0		NS CAL	142
											12.0			
REV														
REV	191	1.5		*	A	1	(N)		O	E	4.0		REV	181
											4.0			
CSIX														
CSIX	192	1.5		*	A	1	(N)	191	O	E	4.0		NATOPS	182
											4.0			
CRP TOTAL FOR PHASE											**60.0**			

CH-46E CREW CHIEF / AERIAL OBSERVER														
200 SERIES CORE SKILL BASIC														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INTVL	DEVICE	# OF A/C	ENVIRMNT	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	EVENT CONV
FAM/INST														
FAM/ INST	201	2.0		180	A	1	(N)		R		0.5		FAM	202
											0.5			
CAL														
CAL	211	1.5		180	A	1	D	201			0.5	201	CALS	211
CAL	212	1.5		180	A	2	D	211	R,O		1.0	211	MULTI A/C CALS	212
											1.5			
EXT														
EXT	221	1.5		365	A	1	D	211	R,O		1.0	211	DAY EXTERNALS	221
											1.0			
FORM														
FORM	231	1.5		180	A	2	D	201	R		0.5		TACFORM	231
											0.5			
TERF														
TERF	241	1.5		180	A	1	D				0.5		TERF MANEUVERS	241
TERF	242	1.5		180	A	1	D	241			0.5	241	TERF	242
TERF	243	1.5		180	A	2	D	242	R,O		1.0	241,242	SEC TERF	243
											2.0			
NS														
NS	251	1.5		180	A	1	NS	211	R,O		0.5	211	HLL CALS	251
NS	252	1.5		180	A	2	NS	231,251			0.5	231	HLL FORM	252
NS	253	1.5		180	A	2	NS	212,252	R,O		1.0	211,212,231,251, 252	HLL SEC CALS	253
NS	254	1.5		180	A	3	NS	253			1.0	211,212,231,251, 252,253	HLL DIV CALS/FORM	254
NS	255	1.5		180	A	1	NS	TERFQ,251			0.5	241,242,243	HLL TERF	255
NS	256	1.5		180	A	2	NS	TERFQ, 252,255	O		1.0	231,241,242,243, 252,255	HLL SEC TERF	256
NS	257	1.5		180	A	2	NS	254,255, 256	R,O		1.0	211,212,231,241, 242,243,251,252, 253,255,256	HLL SEC TERF/CALS	257
											5.5			
AG														
SAG	280		1.5	*	S		D				0.0		DAY SIM AG	280
AG	281	1.5		365	A	1	D	280			1.0	280	DAY AG	281
AG	282	1.5		365	A	2	D	281	R,O		1.0	280,281	SECTION DAY AG	282
AG	283	1.5		365	A	1	D	282	R,O		1.0	280,281,282	DAY MOVING TGT AG	283
											3.0			
CQ														
CQ	291	1.0		365	A	1	D	211	O		0.5		DAY FCLP	291
CQ	293	1.0		365	A	1	NS	251,291	O		0.5	291	NS FCLP	293
											1.0			
CRP TOTAL FOR PHASE											**15.0**			

CH-46E CREW CHIEF / AERIAL OBSERVER														
300 SERIES CORE SKILL ADVANCED														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INTVL	DEVICE	# OF A/C	ENVIRMNT	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	EVENT CONV
CQ														
CQ	300	1.0		365	A	1	D	291	O		1.0	211,291	DAY CQ	300
CQ	301	1.0		365	A	1	NS	293,300	R,O		1.0	211,251,291,293,300, (311 LLL)	NS CQ	301
											2.0			
NS														
NS	311	1.5		180	A	1	NS	257	R,O		1.0	211,251	LLL CALS	311
NS	312	1.5		180	A	2	NS	311	R,O		1.0	211,212,251,252,253, 311	LLL SEC CALS	312
NS	313	1.5		180	A	3	NS	312	R,O		1.0	211,212,251,252,253, 254,311,312	LLL DIV CALS	313
NS	314	1.5		180	A	2	NS	313	R,O		1.0	211,212,231,241,242, 243,251,252,253,255, 256,257,311,312	LLL TERF/FORM/ CALS	314
											4.0			
AG														
SAG	320		1.5	*	S	1	NS	283			0.0		NS SAG	320
AG	321	1.5		365	A	1	NS	320			1.0	281,320	NS AG	321
AG	322	1.5		365	A	2	NS	321	R,O		1.0	281,282,283,321	NS SECTION AG	322
											2.0			
GTR														
GTR	331	1.5		365	A	2	(NS)	TERFQ,AGQ,231	R		1.0	231,241,242,(252), 281,282,(321,322)	GRD THREAT REACT	331
GTR	332	1.5		365	A	2	(NS)	TERFQ,231,331	R		1.0	231, 241, 242,(252)	MULTI A/C GRD THREAT REACT	332
											2.0			
MAT														
MAT	351	1.5		365	A	1	D	211	R,O		1.0	211	DAY MAT	351
											1.0			
HIE														
HIE	361	1.0		365	A	1	D	211,221	R,O		2.0	211	FASTROPE/ RAPPEL	361
HIE	362	1.0		365	A	1	NS	361,392	O		2.0	211,251,361,(311 LLL)	NS FASTROPE/ RAPPEL	362
											4.0			
TAC														
TAC	371	1.5		180	A	2	D	TERFQ,AGQ,212	O		1.0	211,212,231	DAY LOW THREAT	371
TAC	372	1.5		180	A	2	NS	371, NSQ FOR APT LL (OR NSI WITH NON-NSQ PILOT)	O		1.0	211,212,231,251, 252, 253,371,(311 LLL), (312 LLL)	NS LOW THREAT	372
TAC	374	1.5		180	A	2	D	371	O		1.0	211,212,231,371,373	DAY MED THREAT	374
TAC	375	1.5		180	A	2	NS	372	R,O		1.0	211,212,231,251,252, 253,371,372,373,374, (311 LLL),(312 LLL)	NS MED THREAT	375
											4.0			
EXT														
EXT	392	1.5		365	A	1	NS	221,251	R,O		1.0	210,211,221,251,(311 LLL)	NS EXT	392
											1.0			
CRP TOTAL FOR PHASE											**20.0**			

CH-46E CREW CHIEF / AERIAL OBSERVER														
400 SERIES CORE PLUS														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INTVL	DEVICE	# OF A/C	ENVIRMNT	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	EVENT CONV
TAC														
TAC	401	1.5		365	A	2	D	374,332	O		0.4	211,212,231,241, 242,243,331,332, 371, 374	DAY HI THREAT	401
TAC	402	1.5		365	A	2	NS	375, 401, NSQ FOR APT LL	R,O		0.5	211,212,231,241, 242,243,251,252, 253,255,256,257, 331,332,371,372, 374,375,401,(311 LLL),(312 LLL), (314 LLL)	NS HI THREAT	402
											0.9			
CAL														
CAL	413	1.5		365	A	1	N*	201,211	O		0.3	211	UNAIDED CALS	213
											0.3			
EXT														
EXT	420	1.5		365	A	1	D	221,242	O		0.3	211,221,241,242	DAY TERF EXT	420
											0.3			
NBC														
NBC	431	1.0		365	A	1	D	211			0.2	211	DAY NBC	430
NBC	432	1.0		365	A	1	NS	257,431	R		0.3	211,251,431,(311 LLL)	NS NBC	431
											0.5			
DM														
DM	441	1.5		365	A	2	D	332	R		0.3	231,442	RW DM	441
DM	442	1.5		365	A	2	D	332	R		0.3	231	FW DM	442
											0.6			
MAT														
MAT	450	1.5		365	A	2	D	212,351	O		0.2	211,212,351	DAY SEC MAT	450
MAT	451	1.5		365	A	1	NS	251,351	R,O		0.2	211,251,351,(311 LLL)	NS MAT	451
											0.4			
HIE														
HIE	460	1.0		365	A	1	(NS)	221	R,O		0.2	211,221	SPIE	460
HIE	461	1.0		365	A	1	(NS)		R,O		0.2		AERIAL DELIVERY	461
HIE	462	1.0		365	A	1	(NS)		R,O		0.2		HELOCAST/SOF TDUCK	462
HIE	463	1.0		365	A	1	(NS)	221	R,O		0.2	211,221	HOIST OPS	463
											0.8			
SFAM														
SFAM	470		1.5	*	S				R,O		0.1		EP FAM	470
											0.1			
TG														
TG	481	1.5		365	A	1	D	AGQ	R		0.3		DAY TG	481
TG	482	1.5		365	A	1	NS	481	R		0.4	481	NS TG	482
											0.7			
CQ														
CQ	490	1.0		365	A	1	N*	413,291	O		0.2	291	UNAIDED FCLP	292
CQ	491	1.0		365	A	1	N*	292,300	R,O		0.2	211,291,300,413	UNAIDED CQ	491
											0.4			
CRP TOTAL FOR PHASE											**5.0**			

CH-46E CREW CHIEF / AERIAL OBSERVER 500 SERIES INSTRUCTOR														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INTVL	DEVICE	# OF A/C	ENVIRMNT	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	EVENT CONV
FAM														
FAM	500	1.5		*	A	1	D			E	0.0	201	DAY INSTR TECH	500
FAM	501	1.5		*	A	1	N*			E	0.0	201	NIGHT INSTR TECH	505
											0.0			
NAV														
NAV	502	1.5		*	A	1	D			E	0.0	211,351	NAV INSTR TECH	506
											0.0			
CAL														
CAL	503	1.5		*	A	1	D			E	0.0	211,241, 242	CAL INSTR TECH	507
											0.0			
FORM														
FORM	504	1.5		*	A	1	D			E	0.0	231	FORM INSTR TECH	509
											0.0			
TERF														
TERF	505	1.5		*	A	1	D			E	0.0	241	TERF INSTR TECH	
											0.0			
EXT														
EXT	506	1.5		*	A	1	D			E	0.0	201	STAN CERT	513
											0.0			
NS														
NS	507	1.5		*	A	1	NS			E	0.0			
											0.0			
STANX														
STANX	511	3.0		*	A	1	(N)	500-507 ACAD 031		E	0.0	201	STAN CERT	513
											0.0			
AGI														
AGI	540	1.5		*	A	1	D			E	0.0	281	DAY AG IUT	590
AGI	541	1.5		*	A	2	NS			E	0.0	321	NS AG IUT	591
AGI	542	1.5		*	A	1	NS			E	0.0	283	AGI CERT MLT	592
AGI	543	1.5		*	A	2	NS			E	0.0	322	AGI CERT NS SECTION	593
											0.0			
TGI														
TGI	545	1.5		*	A	1	D			E	0.0	481	TGIUT DAY	593
TGI	546	1.5		*	A	1	NS			E	0.0	482	TGIUT NS	593
TGI	547	1.5		*	A	2	NS			E	0.0	482	TGI CERT	593
											0.0			
NSSI														
NSSI	550	1.5		*	A	1	NS			E	0.0	201,211	NS SS WORK	550
NSSI	551	1.5		*	A	1	NS			E	0.0	201,211,251,311	LLL CALS/NAV	551
NSSI	552	1.5		*	A	1	NS			E	0.0	201,211,251,311	LLL CALS/NAV INSTR TECH	552
											0.0			
NSFI														
NSFI	560	1.5		*	A	1	NS			E	0.0	201	HLL SS WORK	560
NSFI	561	1.5		*	A	1	NS			E	0.0	201,211,251	HLL CAL/NAV	561
NSFI	562	1.5		*	A	1	NS			E	0.0	201,211,251	HLL INSTR TECH	562
											0.0			

CH-46E CREW CHIEF / AERIAL OBSERVER														
500 SERIES INSTRUCTOR														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INTVL	DEVICE	# OF A/C	ENVIRMNT	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	EVENT CONV
TERFI														
TERFI	570	1.5		*	A	1	D			E	0.0	221,241,242	DAY TERF MAN INSTR TECH	570
TERFI	571	1.5		*	A	2	D			E	0.0	231,241,242,243	DAY TERF NAV INSTR TECH	571
TERFI	572	1.5		*	A	2	D			E	0.0	231,241,242,243	TERFI CHECK	572
											0.0			
DMI														
DMI	581	1.5		*	A	2	D			E	0.0	231,241	RW/FW DM INSTR TECH	581
DMI	582	1.5		*	A	2	D			E	0.0	231,241	RW/FW DMI CHECK	582
											0.0			
NSI														
NSI	590	1.5		*	A	1	NS			E	0.0	201,211,251,291, 293,(311 LLL)	NS INSTR TECH	590
NSI	591	1.5		*	A	2	NS			E	0.0	201,211,212,251, 252,253,(311 LLL),(312 LLL), (314 LLL)	NS FORM/NAV/CAL/TERF INSTR TECH	591
NSI	592	1.5		*	A	1	NS			E	0.0	201,211,221,251, 291,293,392, (311 LLL)	LLL NSI CHECK	592
NSI	593	1.5		*	A	2	NS			E	0.0	201,211,212,231, 241,242,243,251, 252,253,255,256, 257,(311 LLL), (312 LLL),(314 LLL)	LLL SEC NSI CHECK	593
											0.0			
CRP TOTAL FOR PHASE											**0.0**			

CH-46E CREW CHIEF / AERIAL OBSERVER														
600 SERIES REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS														
STAGE	TRNG CODE	FLT HOURS	SIM HOURS	REFLY INTVL	DEVICE	# OF A/C	ENVIRMNT	PREREQ	POI	EVAL	CRP	CHAINING	EVENT DESC	EVENT CONV
RQD														
RQD	600	1.5		365	A	1	(N)	182	O	E	0.0	200,201	NATOPS CHECK	600
											0.0			
SPECIAL TRAINING														
AWT	621	2.0		*	A	1	(N)	211			0.0		ARCTIC WTHR TRNG	620
DES	622	2.0		*	A	1	(N)	211			0.0		DES OPS	630
WTR	623	1.0		*	A	1	D	211			0.0		WTR LANDINGS	650
											0.0			
FCF														
FCF	630	2.0		*	A	1	D	SQUADRON FCF SYLLABUS AND READING	R	E	0.0		FCF	
											0.0			
CRM														
CRM	640	2.0		365	A/S	1	(N)	COMPLETION OF THE CH-46E CRM COURSE	R	E	0.0		SIM/AC CRM	640
											0.0			
CRP TOTAL FOR PHASE											**0.0**			